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Tampering with Transport

RE-NATIONALISATION of the steel industry and of such road haulage units "as are necessary for a co-ordinated transport system" and nationalisation of "a number of key machine tool firms" are among the proposals put forward in the policy statement of the National Executive of the Labour Party, "Challenge to Britain," published earlier this week. Whatever form re-nationalisation of the steel industry is expected by its advocates to take, further meddling with the highly efficient steel industry would be most unfortunate—even although the changes might do little more than pay lip service to public ownership. Nationalisation of machine tool firms, which despite their efficient organisation and high productivity already are tackling major problems of their own, could only be a disaster. "Co-ordination" of transport is a vague term; and as sale of road haulage assets has hardly begun, it is difficult to see what is intended except doctrinaire action for nationalisation's sake. The policy statement could hardly have made proposals for reorganisation of the railways; they remain in public ownership under the new Act, and the present Government's detailed plans for their reorganisation have not yet been made known in the White Paper. The avowed intention of the Labour Party, of effecting improvements in railway rolling stock and permanent way and of extending electrification goes no further than the aspirations of many in all parties. The governing factors are not political but financial and labour availability. The railways and other forms of transport already are suffering from political interference by one party or another. What the railways need, apart from authority to go ahead with their schemes for capital development, is to be left, unhampered by political planners, to manage their own affairs and to hold their own in the competitive world of transport; there the degree of competition has been increased by the new Act. It says much for the efficiency of British Railways that despite their difficulties it can be confidently expected that when the British Transport Commission report for 1952 appears today, they will be found to have more than paid their way last year, as in previous years.

Loss of the "Princess Victoria"

THE most significant of the findings of the Court appointed to inquire into the loss during the gale of January 31 of ss. *Princess Victoria* is the criticism of the organisation of British Railways Irish shipping services, and notably of the difficulties arising from remote control as exemplified in defective superintendence of the ship. A summary of the findings is given on another page. The Court found that "there was no one in the whole organisation whose sole duty it was to look after the well-being of the structure of the ships" and drew attention to the practical difficulties of the master of the vessel at Stranraer having to communicate with his headquarters at Euston, 400 miles away. Despite the Court's finding that the heavy seas encountered might have been envisaged and provided for, the foundering was the result of a combination of exceptional circumstances. The statement that British Railways' stern-loading vessels on these and other services are already having their stern doors stiffened and freeing ports fitted is an acknowledgment that the lessons were taken to heart even during the lengthy hearings. The organisational aspect doubtless also is receiving attention; it is in some respects concerned with that of the railways as a whole, the subject of the forthcoming White Paper.

Indian Railways 1954-55 Rolling Stock Programme

GREAT scope for builders of steam locomotives and wagons, and opportunities for manufacturers of electric rolling stock are features of the Indian Railway Board rolling stock foreign procurement programme for 1954-55; this is set out in detail in our Contracts & Tenders section on another page. The programme calls for tenders *inter alia* for some 250 steam locomotives, nearly 10,000 wagons without wheels and axles and 50 multiple-unit vehicles for the Bombay suburban electrified services, besides large quantities of wheels and axles—14,000 for broad and 8,800 for metre and narrow gauge—40 travelling cranes, eight narrow-gauge diesel locomotives; another item of interest is 24 broad-gauge lightweight diesel-hydraulic railcars. The steam locomotives for which tenders are sought include 100 "YP" class (metre gauge) and a similar number of the "WG" class for broad-gauge goods haulage with 20 "WHG" class 4-8-2+2-8-2 Beyer-Garratt locomotives. The 1953-54 programme provided for a smaller number of locomotives and wagons, 125 and 3,860, respectively, but it included 200 passenger coaches, an item which finds no place in the new programme. Special attention is drawn to the importance of timely deliveries, and the importance which the Railway Board attaches to offers for the supply of locomotive components and steel plates and sheets is stressed.

Portuguese Electrification

THE report of the commission now studying electrification of sections of the Portuguese Railways is expected later this summer. Conversion is proposed of the suburban line from Lisbon Rossio passenger terminus to Sintra, 17 miles, and of the mostly double-track main line for both passenger and goods traffic from Lisbon Rossio and docks to

Oporto, 220 miles, or in the first instance to the junction of Entroncamento, 70 miles. Importation of locomotive coal is a serious problem—as also is finance for any major development project, and hydro-electric power is understood to be fairly readily available. The Lisbon-Oporto main line, though amounting to one-tenth of the route mileage of the system, carries nearly half the traffic, which, between the only two considerable population centres in Portugal, is increased by industrial plants on or near this route. Keen interest therefore is being taken in 50-cycle electric traction developments on the French National Railways, both in Savoy, where the Aix-les-Bains to La Roche-sur-Foron line is carrying lighter traffic than will be borne in Portugal, and the Valenciennes-Thionville electrification now in progress, which will carry far heavier traffic.

Lisbon Suburban Problems

ELECTRIFICATION of steam-worked suburban and main-line services in and out of Rossio will help to solve a traffic problem. The terminus is approached by a long double-track tunnel and proximity of the tunnel mouth restricts the length of platforms and trains and hinders engine movements. Use of multiple-unit suburban stock will reduce such movements and save a coach length, and electrification and re-signalling will increase line capacity during rush hours. One of the greatest disadvantages of steam working at Rossio is reported to be pollution of the tunnel atmosphere by steam locomotives, which virtually precludes diesel working through it, because of the chemical effects on diesel engines of impurities drawn in through the air intakes. Consequently diesel locomotives used on principal expresses are attached or detached at Campolide at the far end of the tunnel, where there is a diesel depot; and the Lisbon-Oporto high-speed diesel trains must use the Santa Apolonia terminus, situated less centrally. Bus and tram competition is also making itself felt, but electrification is expected to create traffic in off-peak hours.

Development of Aluminium Structures

THE development in the use of aluminium alloys in recent years for the construction of railway rolling stock and allied equipment has been such that the Aluminium Development Association devoted the whole of a recent issue of its journal to featuring the use of these alloys for railway material. It has long been recognised by railway engineers that first cost is by no means the sole criterion in economic operation, and the influence of running costs and maintenance during the life of vehicles more than offsets the difference in initial cost of aluminium, as compared with the use of the more traditional materials. With bulk traffic, increased payload is possible, providing an efficient net ton-miles figure. Constructional details featured include the London Transport Executive aluminium stock placed in service unpainted, the five-car diesel train, "The Silver City Comet," which has been running on the New South Wales Government Railways since 1937, S.N.C.F. double-decker suburban stock, and Swiss Federal Railways passenger coaches, the weight per unit length of which is 510 lb. per ft. compared with 710 lb. per ft. of the steel stock formerly used on the same services. Also included is signalling equipment manufactured by the Westinghouse Brake & Signal Co. Ltd.

Wanton Damage to Rhodesian Rolling Stock

BRITISH RAILWAYS are not alone among those of the Commonwealth in losing thousands of pounds a year as a result of damage to coaches caused by passengers. The *Rhodesia Railways Magazine* complains that new saloon coaches which cost some £20,000 each are rarely more than a month in service before receiving the attentions of the pilferer or the slasher. Carpets burned by cigarette ends, ashtrays stolen, seats torn and lampshades removed are, however, only part of the catalogue of crime. Sheets, pillow slips and towels are used as shoe cleaners and linen is often torn and soiled so badly that it has to be written off. Such a state of affairs is bad enough anywhere, but in a country like Rhodesia, where the climate and length of journey demand special and usually costly amenities for passengers, it is particularly serious. As the Rhodesia Railways can hardly go to the expense of appointing an inspector for every coach and an appeal to the section of the public responsible would probably be profitless there seems to be no easy solution. It would be instructive to know to what extent other Commonwealth systems are faced with the problem and how they are tackling it.

Metre-Gauge Expansion in India

SINCE Partition in 1947, all the larger new railways constructed or under construction in India have been metre gauge. First there was the Assam Link line providing a through route some 300 miles long between Bengal and the Assam Valley without passing through Pakistan territory, completed in 1950. Then there is the Kandla-Deesa line from the west coast, 170 miles. Now two more important constructions have been sanctioned and are reported to be in hand: the Quilon-Ernakulam, 120 miles, and the Khandwa-Hingoli, 187 miles long. Ernakulam is near the port of Cochin, terminus of a broad-gauge branch on the south-west coast, and Quilon is on a metre-gauge branch further south along the coast. The Khandwa-Hingoli link will join the metre-gauge networks in northern and southern India. Of these four new metre-gauge lines, totalling 800 route-miles, the Assam Link and the Khandwa-Hingoli railways are the direct results of Partition, the former on political grounds and the latter caused by a reorientation of the flow of traffic, resulting from Karachi ceasing to be in the Republic of India. The Khandwa-Hingoli connection will greatly improve transfer and user of rolling stock throughout the country; and it is besides an important strategic and commercial traffic link.

Distraction on the Footplate

THE question why signals, even when in full clear view, are at times disregarded often has been debated and an article in this issue, from a correspondent, discusses some factors in that puzzling problem. His reference to the effects of outside interests on the mind recalls the distrust of educated enginemen felt by Brunel, who said he did not "sneer at education" but thought the non-reading man was the better man for the footplate. It was "impossible that a man that indulged in reading should make a good engine-driver." The job required "a species of machine," and while he wished for an intelligent, honest, and sober man, Brunel declared he would "much rather not have a thinking man." Our correspondent also refers to the temporary distraction offered in daylight by the numerous surrounding objects. It was this that prompted the misgivings felt by some, such as a former Signal Engineer of the G.W.R., the late Mr. R. J. Insell, when colour-light signalling was first proposed. They thought that the old signals still would prove more arrestive by day than a light, even when quite powerful, with so many other things in view all round tending to catch the attention, unlike the conditions at night when lights predominated.

Blea Moor and Crewkerne Accidents

WE have already referred in our January 9 issue to the general question raised in Colonel D. McMullen's report on the serious derailment at Blea Moor on April 18, 1952, where the false opening of a facing point tongue by a piece of hanging brake gear caused the second engine of a double-headed express to be turned along the wrong line and thrown off the track. It is extraordinary that no fatality resulted as much damage was done to the train and permanent way. The principal details of the accident and of the other referred to in the report, which occurred near Crewkerne on October 25, 1952, are summarised in the present issue. The lesson of these cases is that too much care cannot be given to securing the best possible training for all concerned in locomotive maintenance work, providing adequate instructions to guide them, and seeing

that these instructions are faithfully carried out. At the same time it must be ensured that whenever any weak point in design comes to light no time shall be lost in replacing an item of equipment that may be affected by it, so ensuring elimination of all sources of dangerous failure.

New Diesel Shunters for British Railways

BRITISH RAILWAYS have recently placed in service 25 standard type 0-6-0 diesel-electric shunting engines which should result in considerable economy in shunting operations. Experience has shown that such locomotives, properly designed to exclude dust and moisture, are capable of giving long hours of service with only intermittent inspection, with a consequent high figure of availability. The present design, for example, can run for 15 days without refuelling. The locomotives, which were designed at Derby, have English Electric power equipment which includes a six-cylinder diesel engine and traction motors of the company's standard design. There are two motors, mounted on the leading and trailing coupled axles, and force-ventilated by a fan belt-driven from the main generator shaft. Their continuous rating is 280 amp., 400 V. The main frames are 1 in. thick steel plate and are positioned outside the wheels, which are 4 ft. 6 in. dia. The engine framework is welded from rolled steel sections, and the usual provision has been made in the roof for servicing purposes The locomotives, which are illustrated elsewhere in this issue, have a tractive effort of 35,000 lb. and a maximum speed of 20 m.p.h.

Government Regulation of Railway Safety

THE relationship evolved in Great Britain between Government regulation of railway safety and the responsibilities in this matter of the railways themselves is a factor that has contributed much to the degree of freedom from accident achieved. This process of development is seen in an article contributed to the *Bulletin of the International Railway Congress Association* by Brigadier C. A. Langley, Inspecting Officer of Railways, Ministry of Transport, in which he traces the history of Government regulation in safety matters since 1840, when the appointment of the first Inspecting Officers of Railways under the Board of Trade was authorised. This step followed the findings of the 1839 Select Committee on Railway Communications—to the effect that some Governmental control of railways was necessary, but that interference with their working should be kept to a minimum. Subsequent committees and commissions up to the 1870s all agreed that responsibility for safe operation should rest on the railway companies concerned, and this principle was stated in the report of the Royal Commission appointed in 1874, in terms that today might be thought to apply outside the sphere of safety alone.

The relevant passage read: "To impose upon any public department the duty, and to entrust it with the necessary powers, to exercise a general control over the practical administration of railways would not, in our opinion, be either prudent or desirable. A Government authority placed in such a position would be exposed to the danger either of appearing indirectly to guarantee works, appliances, and arrangements which might practically prove faulty or insufficient, or else of interfering with railway management to an extent which would soon alienate from it public sympathy and confidence, and thus destroy its moral influence, and with it its capacity for usefulness. . . ."

The Tay Bridge disaster of December 28, 1879, raised criticism to the effect that the Inspecting Officers should have supervised the design and construction of the bridge. This was answered in a minute approved by Joseph Chamberlain, President of the Board of Trade, which declared that to entrust a public department with correcting and guaranteeing the designs of the engineers responsible for railway structures would be "to check and control the enterprise which has done so much for this country, and to substitute for the real responsibility which rests on the railway engineer the unreal and delusive responsibility of a public office."

Accident inquiries were held by the Inspecting Officers from the earliest days, although it was not until 1871 that such inquiries, or more formal investigations by a legal officer with an Inspecting Officer to help him, were legalised, and the President of the Board of Trade was compelled to make public the reports of such courts and inquiries. Brigadier Langley remarks that although the Inspecting Officer's recommendations after an accident inquiry still cannot be enforced, the effect of publicity combined with thorough investigation and discussion with the railway officers, usually results in their being accepted. His article recalls some of the accidents which have become landmarks in the history of railway operating because of steps taken to prevent a recurrence of similar incidents as a result of the bringing to light at the inquiry of technical or other weaknesses. Apart from such revisions of practice, there are, of course, safety measures which must be complied with before the opening of a new line of railway will be authorised by the Ministry of Transport. The first known edition of these requirements was issued by the Board of Trade on April 29, 1858, and the latest appeared from the Ministry of Transport in 1950.

It will be recalled that the development of these Board of Trade, and later Ministry of Transport, requirements, was the subject of Mr. T. S. Lascelles' Presidential Address to the Institution of Railway Signal Engineers last year, to which we referred in our April 18, 1952, issue. The whole process is summed up by Brigadier Langley in his article as being a policy in keeping with the well-known British principles of allowing the individual maximum freedom to develop ideas and projects on his own initiative, and of restricting Government regulation to the minimum essentials. Its fruits are seen in the high degree of safety long enjoyed by the railway passenger, and the wide field left to individual resource and ingenuity in perfecting and testing under service conditions many types of signalling and other safety devices.

Nigerian Railway

THE report of the Nigerian Railway for the year ended March 31, 1952, a copy of which we have received from Mr. D. C. Woodward, General Manager, covers a period which in many ways was the most successful on record. Operations resulted in a surplus balance of £495,000; much of the increase in revenue was attributable to increases in rates and fares, but even so the volume of traffic was greater than in the preceding year. As the General Manager remarks, such a result, including a reduction in expenditure, is remarkable in these days of inflation. It was achieved, moreover, in spite of such unfavourable circumstances as the failure of the previous year's groundnut crop which left the railway with none of that staple commodity to move between August and October, 1951, and a go-slow strike of enginemen.

The principal results are given below:—

	1950-51	1951-52
	(thousands)	
Passenger journeys	5,585	5,546
Tonnage hauled	1,225	1,338
Passenger train-miles	1,281	1,165
Goods train-miles	3,982	3,676
	(£ thousands)	
Passenger, parcels and mails receipts	1,115	1,318
Goods and livestock receipts	5,027	6,185
Road transport receipts	64	58
Total operating receipts	6,404	7,817
Operating expenditure	4,883	4,862
Operating surplus	1,521	2,955
Renewals contributions	830	1,250
Interest on capital	754	840
Net deficit	327	495

A satisfactory feature is that there is now a considerable volume of goods traffic of a steady and dependable character, such as foodstuffs and other articles for domestic consumption. In the past the railway has suffered much from fluctuating groundnut yields. Earning capacity is now conditioned by the motive power available; when the report was prepared 49 new locomotives were awaited from the makers. More economic use of coal brought

about by increasing the average train-load has helped to check rising costs.

Although the number of passengers carried did not increase, the distances travelled were longer. The formation in April, 1951, of the new Operating Department under the direction of the Chief Superintendent (Operating & Commercial) has brought considerable improvement in train operating. All engine drivers and running shed staff have been transferred to that department.

The number of engine failures, although reduced, is regarded as still being greater than desirable. Attention is drawn as in previous reports to the handicap imposed by the difficulty of obtaining spare parts for locomotives. Ten staff coaches, six third-class canteen cars, and three first-class coaches were placed in service; the last-mentioned have six compartments of which two are four-berth and four are two-berth. Sixty 30-ton wagons were received.

Early in April, 1951, stocks of coal failed at Ijora mines in the Eastern Province. As a consequence coal stocks at depots remained throughout the year equivalent to only a few days' supply. A major breakdown of services was, however, avoided.

Fair progress has been made on most major capital works. At Jos the new goods shed and yard are almost complete and the new passenger platforms are well in hand. The long-planned new station at Iddo (Lagos) has been begun, the new running shed at Ebute Metta Junction is under construction and regrading and realignment at Zaria have been finished. It is planned to remodel the marshalling yards at Jebba and Kaduna.

The port capacity at Apapa and Port Harcourt was strained to the utmost and the volume of import traffic continued to increase without any sign of slackening. The extension of Apapa Wharf made progress although retarded by the late arrival of essential plant. During the period under review the Government decided to set up a port authority, an autonomous statutory corporation to take over all ports in Nigeria.

Justification of American Large-Scale Modernisation

THE means by which railway solvency is being achieved in other countries is of some interest, and especially in the United States, where road and air competition are keener than anywhere else. It is significant that American railway revenues are rising and operating costs are being reduced. The average return on capital invested in them is now stated to be 4·25 per cent, and although this is not considered sufficiently high to enable all the essential modernisation works to be undertaken, it indicates progress in that direction, and vast sums are already being allocated to such works. Incidentally, the net income of those railways in September, 1952, is given as $502 million as compared with $391 million for the same period in 1951.

It is characteristic of the American administrations that they are content with nothing less than the expenditure of every available dollar on widespread and costly constructional modernisation developments, particularly with a view to speeding up and generally improving freight traffic. This policy would appear to be paying increasingly satisfactory dividends, judging by the figures quoted above, and is the more remarkable in the face of unprecedented competition.

To give some idea of the measures being taken mainly to improve freight movements, the Pennsylvania Railroad is spending $34 million in order to treble the capacity of Conway yards near Pittsburgh, already one of the largest freight concentrations in the country. When expansion is complete in 1955, this classification yard will have a daily capacity of 8,000 wagons, and its width at the centre will be 85 tracks and its length 3½ miles. This railway is also devoting $12 million to building the largest and most modern wagon repair shops in the U.S.A. at Hollidaysburg near Altoona. When completed in 1954 they will be able to turn out 50 wagons a day. It is also hastening completion of two other betterment works, each estimated to cost $8 million, namely an iron-ore pier at South Philadelphia and the remodelling of Morrisville yards to cater for additional United Steel Corporation traffic. Incidentally, the new passenger station at 30th Street, Philadelphia, is costing the Pennsylvania Railroad $22 million, and improvements in hand in Pittsburgh will total $41 million, $27 million for passenger and $14 million for freight traffic facilities. The New York Central administration also has an $83 million expansion programme in hand, including the $8-million Harlem bridge and a share in the great works at Toledo, described in our issues of December 23 and 30, 1949.

Further west the Sante Fe Railway is building a remarkable $20-million goods shed at Chicago, ¼ mile long and replete with two "towveyor" roller-chain systems, with catch devices at 15-ft. intervals for engaging platform trolleys of which there will be 500. The Union Pacific management has allocated $14 million to realignments near Cheyenne, and a like sum to the provision of additional diesel servicing facilities at Los Angeles. Other realignment and regrading works costing $17 million are in progress on the Southern Pacific system in the Williamette River area. Another big realignment undertaking involving the removal of 42 miles of existing line is in hand near Council Bluffs on the Chicago, Rock Island & Pacific system.

In the Southern States work is in progress at Nashville on a $14 million new joint yard, and at Birmingham the Southern Railroad is building a $9-million train yard and locomotive depot. Among the various Norfolk & Western undertakings are freight and passenger facilities at Elkhorn costing $4 million. At New Orleans a new $15-million union passenger station and nine miles of approach tracks are nearly complete. Some $29 million are being spent on the elimination of level crossings in and around that city.

These are only a few of the improvement works in hand, and it is clear that American railways are making every effort to hasten modernisation, at an estimated cost of some $410 million in 1952. Since the end of the war about $7 billion have been allocated to capital expenditure, $2 billion being spent on permanent way, bridges and structures, and $5 billion on locomotives, rolling stock and other equipment, evidently to good effect. Now the tempo of the structural improvements is accelerating.

Machine Tool Production

THERE was an increase of more than 30 per cent over 1952 in the value of machine tools and parts produced by British manufacturers during the first two months of the current year, when the figure was £12·4 million as compared with £9·4 million. Progress with defence commitments has permitted quicker fulfilment of other orders, and there are prospects of sustained demand both at home and overseas. As far as this country's requirements are concerned, it is not felt that complete independence of foreign suppliers is desirable; certain highly specialised machines developed in Switzerland and the United States are needed in small quantities which would not make their production here economically justifiable. In any case, the countries that developed them are in a position to proceed with the addition of refinements which it would be difficult to challenge.

Price is the factor to which most attention is directed when considering prospects in overseas markets. British machine tools are reasonably competitive in this direction, but it will be recalled that the recent report of the British productivity team which toured the U.S.A. considered that in general both British and American machine tools were too expensive. The suggestion then made that excessive attention was being paid to appearance, finish, and even to accuracy in certain parts, was quickly challenged in various quarters at the time. It is on these factors that the reputation of British machine tools has been founded, and to relax them would have a deleterious effect, particularly when in other respects the machines of the various major producing countries are so evenly matched. In present circumstances it is unlikely that any producer will be able to develop a revolutionary feature of general

application. The trend is towards wider application of electrical drives and electronic controls, in which knowledge and experience are widely shared.

Another step to price reduction recommended by the team was rationalisation within the industry, which was put forward as a means of improving productivity. Most manufacturers are likely to feel that they have sufficient preoccupations without embarking on organisational changes of this kind. Their immediate problem is one of obtaining labour to make full use of their present plant, in which they face competition from other industries and the difficulty of adapting skilled workers from different fields to their own standards and requirements. With this problem there goes the ever-present anxiety over the trend of production costs, sharpened by prospects of new wage increases. So far this year some improvement in general engineering export business and prospects has been discerned, but it is still felt that business is being lost on the score of prices. Internal reorganisation, a heightened sales effort, and personal investigation of overseas markets by executives are the principal steps that are being taken by the firms themselves, and there is evidence of their success. There is also some reason to hope that appreciation of economic facts is growing, and certain spokesmen for the unions have lately urged on the members the need for efficiency if this country is to retain its place as an exporting nation.

The Pennsylvania Railroad

THE Pennsylvania Railroad Company is proud that it has paid a cash dividend every year since 1848. For 32 years from 1900 onwards the average rate of dividend was six per cent. Then ensued 21 years of financial stringency and for the last three years two per cent was paid. Nevertheless the Pennsylvania remains the greatest railway in North America. It is responsible for 10 per cent of the total investment in U.S.A. railway property. Operating 4·5 per cent of the route mileage of all the U.S.A. Class I railways and 6·5 per cent of their track mileage, the Pennsylvania works about 8·5 per cent of the total ton-miles and 14 per cent of the passenger miles. It owns 10 per cent, or more, of the locomotive tractive power, freight wagons and passenger train cars. It employs 10 per cent of all railway servants and earns nearly 10 per cent of total operating revenues.

In 1952 the Pennsylvania operated 9,959 route miles in freight service, carrying 20,310 revenue tons per mile of road and working 5,200,600 ton-miles (including free-hauled traffic) per mile of road. This great density of traffic would have been higher but for a decrease of 8·6 per cent in ton-miles, caused mainly by the steel strike and stoppages at iron ore and coal mines. The Pennsylvania estimated the loss of freight revenue through labour disputes at $46,000,000 and its total freight revenue of $767,300,000 was $16,300,000 less than in 1951.

Railway statistics are apt to wilt when ton-miles decline, save that freight train speed generally improves because lines are less occupied. The Pennsylvania's net train load of 1,488 tons last year was 37 tons below 1951, but higher than in any earlier year. The average train consisted of 68 wagons and moved at the record speed of 16·4 m.p.h., compared with 15·3 the year before. The average haul lengthened by 4·1 miles to 247·7 miles and 23,721 net ton-miles were worked in a train hour, an advance of 5·3 per cent on 1951 and another statistical peak. Freight train miles numbered 35,800,000, which was 2,750,000, or about 7 per cent, fewer than in 1951.

These results were due in some measure to the completion of an extensive programme for installing diesel-electric locomotives. In 1946 the Pennsylvania owned 34 diesels. By the end of 1952 it possessed 1,330 diesels, with a combined horsepower of 2,588,570, acquired at a cost of $277,700,000. It also owned 271 electric locomotives and had sufficient diesel and electric power to move 96 per cent of its passenger traffic and 82 per cent of its freight traffic, as well as performing 91 per cent of the shunting operations.

To improve freight services, the Pennsylvania is providing additional facilities on a large scale. It does not make the mistake of frittering away capital expenditure on small works, which cannot yield a substantial return. At Morrisville, near Philadelphia, the freight yard is being reconstructed at a cost of $9,400,000 to cater for the growing industries of the Delaware River Valley. At Captina, Ohio, eight miles of track are being laid down at a cost of $3,400,000 to tap a new coalfield containing 30,000,000 tons of high-grade coal.

In November the company launched a new programme involving an expenditure of $47,000,000 from its own resources, spread over the next three years. The largest project is to spend $34,200,000 on a new classification yard at Conway, 22 miles west of Pittsburg. The yard will be the largest on the system and is expected to save from 2 to 12 hours in the schedules of many fast trains. Another ambitious proposal is to build a new wagon repair shop at Hollidaysburg, eight miles south of Altoona, at a cost of $12,000,000. This shop will be the largest and finest in the United States, turning out 50 repaired wagons a day from three assembly lines. It will be known as the Samuel Rea Shop in honour of the ninth President of the Pennsylvania Railroad, who was a native of the town and began his railway career there at the age of 16. There will be plenty of work for the shop, for the railroad owns 175,000 wagons, with a total capacity of over 10,000,000 tons, and had 9·5 per cent of the stock in need of repair at the end of December. The number of new wagons built in 1952 was 3,438. Only one was a flat wagon, but it was the world's largest and strongest, able to carry 250 tons. Fully loaded, this wagon, described as "of heavy-duty depressed platform type" weighs more than 500 tons.

In 1952 the Pennslyvania ran passenger trains over 5,383 miles of road and carried 72,879,400 people for an average distance of 65·2 miles. Passenger miles numbered 4,749,000,000. Thirty years ago the railroad carried 139,300,000 passengers, but worked only 4,600,400,000 passenger miles, showing how present-day journeys have lengthened. In 1923 passenger revenue and average takings per passenger mile were close to 1952 figures. The Pennsylvania is striving to reduce the deficit from passenger business by cutting out lightly loaded trains and reduced coaching train miles by 1,790,000 last year, or 4·7 per cent. It is trying also to develop travel on popular "named trains" by placing a supervisor in charge of each to look after its preparation, cleaning, restaurant car service and other amenities. The company intends to keep its dining cars among America's best restaurants, though that meant an operating ratio of 135 per cent last year.

Financial results in 1952 were better than the previous year's, an operating ratio of 84·17 per cent comparing with 85·50 per cent in 1951. Operating expenses were three per cent lower last year and the net income of $36,981,360 was $10,284,000 higher than in 1951. This net income was still only 3·59 cents per dollar of operating revenue and the return on property investment, after depreciation, was no more than 2·98 per cent. Equipment trust obligations of $350,700,000 are a great burden, but after the present year the board of directors expects capital expenditure to diminish and not to add to the total debt. There was an increase of $1,600,000 in working capital at the end of the year, bringing the total to $163,400,000.

It will benefit all railways if the Pennsylvania's financial position becomes stronger, for it has always been ready to make large-scale trials of new appliances and devices to improve permanent way, rolling stock and train movements. Much of its splendid track is laid with heavy rail weighing up to 150 lb. a yard. The inductive train telephone, to take another example, is used on 3,499 track miles, 1,036 locomotives and 136 fixed stations having been equipped at a cost to date of $9,000,000. Again, 337 locomotives have been fitted with automatic speed control and this safety device is being installed on 135 more engines. The Pennsylvania never refuses to let other railways have the advantage of its experience in dealing with engineering or operational problems.

B

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

A Faster London-Paris Service

June 12

SIR,—I have read with interest the letter entitled "A Faster London-Paris Service" from Mr. H. Colyer-Fergusson in your May 29 issue.

For the sake of accuracy may I point out that had Fogg travelled from London by the Train Ferry Service on October 2, 1952, he would have left Victoria at 10 p.m. and not 9 p.m. In addition, from the timings quoted by your correspondent, Jules Verne's traveller would have arrived at Turin 1 hr. 45 min. earlier than in 1872 and not 15 min. later (6.50 a.m. instead of 8.35 a.m.).

However these are points of detail, but I should like to point out that Fogg could have left London on October 3 by the 11 a.m. service from Victoria *via* Calais, arriving in Paris at 6.8 p.m., and still have had time to catch the 7.50 p.m. train from Paris to Turin without waiting all day in Paris for it.

Further, had Fogg made his famous bet on September 2, 1952, he could have left London by the Dieppe service at 8.20 p.m. from Victoria, arriving in Paris at 5.43 a.m. on September 3 in time to catch the 8.20 a.m. (not the 8.10 a.m.) train from Paris to Turin, where he would have arrived at 8.20 p.m. the same evening, or 12 hr. 15 min. earlier than in 1872.

Assuming, as your correspondent has done, the accuracy of Jules Verne's figures, it is interesting to note that it transpires from this correspondence that the journey from Paris to Turin now takes only 11 or 12 hr. instead of nearly 24 hr. as in 1872. In this case it would appear that the full benefit has been derived from technical progress.

I am sure, however, that your correspondent will appreciate that it is not possible to provide connections from Paris to all parts of Europe with every service from London. Nevertheless, during the summer of 1953 the following connections will be available between London and Turin:—

London	dep.	11.0 a.m.	2.0 p.m.	8.20 p.m.	
Paris Nord	arr.	6.12 p.m. (*a*)	9.20 p.m.	—	
„ St. Lazare	arr.	—	—	5.44 a.m. (*c*)	
„ Lyon	dep.	7.55 p.m.	11.40 p.m. (*b*)	8.10 a.m.	
Turin	arr.	6.52 a.m.	2.24 p.m.	8.23 p.m.	

(*a*) Through first and third class *wagon-lits* and ordinary seats Calais-Turin
(*b*) *Via* Lyons
(*c*) From London to Paris *via* Dieppe every evening from July 24 to August 31

Yours faithfully,

C. M. HANNOYER,
General Manager

French Railways Limited,
Victoria Station, S.W.1

The Decrease in Railborne Merchandise

June 13

SIR,—The review of April operating results in your June 12 issue mentioned that Cerebos Limited proposed to distribute its products in future by its own road vehicles. This is a sad ending to the co-operative efforts of the manufacturers and the North Eastern Railway in developing the salt industry on the north bank of the Tees. The salt trade is one of the oldest on the North East coast. Salt from Greatham was esteemed in the 15th century, but manufacture on a large scale did not begin there until the 19th century was nearing a close. About the turn of the century the North Eastern Railway shipped occasional cargoes of rough salt at the Hartlepools, possibly adding to its savour by putting it on board ship in the buckets used for discharging iron ore. In 1894 Mr. George Weddel started the manufacture of table salt at Newcastle-on-Tyne on scientific principles, mixing certain phosphates with the raw material from Greatham. In 1903 his company bought the Greatham brine works and moved its factory to Tees-side, where the whole process from the pumping of the brine to the packing of the salt could be carried out. The new works saved transport costs and provided employment for hundreds of young women from the Hartlepools, where the "salt girls' train" became a local institution.

It seems a shame that the pleasant relations which existed for many years between Cerebos and the railway company should be interrupted. One wonders whether the chopping and changing of regional and district commercial offices over a period of more than five years has weakened many links between the traders and the railways. To take a recent instance, your May 29 issue told us that henceforth the people of Nottingham are to address all communications about passenger and freight services to the District Commercial Superintendent at Derby. This arrangement is not likely to popularise British Railways with the citizens of no mean city, which stands at the head of the Trent Navigation and is an ideal centre for the development of road transport.

Yours faithfully,

R. BELL

Frognal, N.W.3

Improving Through Services and Connections

June 13

SIR,—I welcome the improvements in train services in the summer timetables, but there are still some black spots which require urgent attention.

Some necessary cross-country services, such as between Scotland and Wales or the West of England, are missing. There is at least one through train daily from Manchester to Brent or March, to Bridgwater, Bridgend, and Bridge of Dun, but none to the more important cities and towns of Worcester, Oxford, Cambridge, Reading, Southampton, Portsmouth or Dover. Worcester, now seldom less than a four-hour journey away from Manchester, could best be reached by a slight deviation of the "Pines Express," adding about 15 min. to its running time. Before the war the G.W.R. ran a Manchester portion of the Birkenhead-Bournemouth train *via* Market Drayton. Today, a journey to Western Region stations south of Birmingham involves a change of station from High Level to Low Level at Wolverhampton—an awkward change involving two overbridges and a subway.

The trains from Newcastle to Penzance, Ilfracombe to Manchester, Ilfracombe to Cardiff, Gloucester to Filey Camp, and others, are without return services covering the whole distance. Sometimes trains call at certain intermediate stations in one direction only, for example, the northbound "Pines Express."

The last daytime train from Paddington (6.55 p.m.) is booked into Newport at 9.42 p.m. Two local trains, ultimately serving four destinations (Ebbw Vale, Brynmawr, Blaenavon and Abergavenny) and all intermediate stations, are booked out at 9.40 p.m. Except on Saturdays, these local trains are the last of the day for most places. A 5 min. acceleration of the express, and/or a 10 min. delay in the local trains would enable the connections to be made.

The presentation of timetables would be greatly improved if the principle of "heavy figures indicate through carriages," used in some summary tables, were used throughout all Regional timetables, not only for the summaries.

I am glad to see that my suggestion, made in your columns on June 23, 1950, that the Railway Executive's own delivery services should be used to distribute their timetables, has now been put into force.

Yours faithfully,

WILLIAM J. SKILLERN

15, Hollymount Road, Stockport

FORESTAL LAND, TIMBER & RAILWAYS COMPANY.—Treasury consent has been received to the proposal to make a scrip issue to shareholders of 927,209 £1 ordinary shares of the Forestal Land, Timber & Railways Co. Ltd. in the proportion of one for every four stock units or bearer shares held.

THE SCRAP HEAP

Power for the Peak

Evershed News, the organ of Evershed & Vignoles Limited, has published an analysis of rush-hour traffic on London Transport railways based on the consumption chart produced by an Evershed recorder at Lots Road power station. This showed that the biggest load on the day chosen was reached at 5.37 p.m., when it attained 113 megawatts.

Train that Never Comes

I have just been forced to slow down by a " ghost train " which appears before motorists on Kentish lanes at any hour of the day or night.

More than a year has passed since the last train rumbled over the 11 miles of single-line railway which used to connect the East Kent villages of Shepherdswell and Wingham. . . . But at each junction with the road there is a sign " Crossing—no gates," surmounted by an illuminated replica of a Victorian locomotive. Road-users . . . complain that the signs cause delays because strangers are unaware that they need no longer stop, watch and listen.—*From the " Evening News."*

Roundhouses

British Railways are at present rebuilding the engine shed at the north end of Crewe Station, . . . and are about to build a completely new engine shed at Thornaby, in the North Eastern Region. Both are to be of the roundhouse design. Thus the wheel has turned full circle, and the roundhouse, for so many years scorned by railway architects, has come into its own again. The first engine sheds were mostly roundhouses, but when in time they decayed they were nearly all replaced by sheds of the usual rectangular design.

The argument was that it was so much easier to get engines into and out of them, and that there was so much more room to accommodate engines undergoing light repairs or having their regular washouts. As recently as 1950 a senior railway officer examined in a book the merits of the rectangular as opposed to the roundhouse type of shed, and came down heavily on the side of the former. He pertinently asked what happens in a roundhouse if the central turntable breaks down. No doubt the present architects of British Railways have thought of that and have their answer, though they have not said what it is. — *From " The Manchester Guardian."*

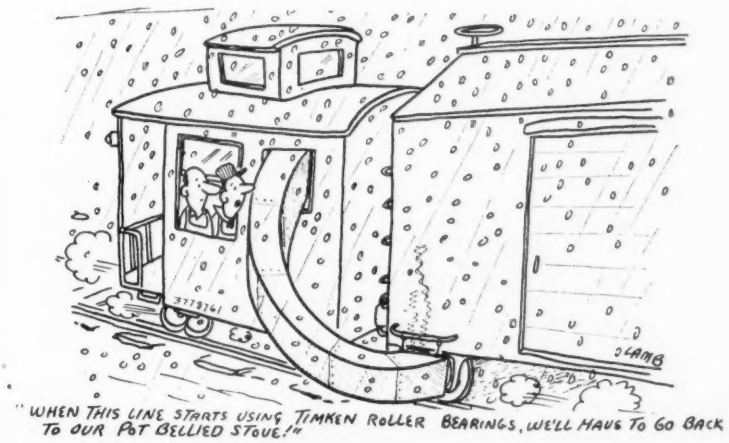
Buses on Rails

The G.P.O. realises it has a moral obligation towards the inhabitants of sparsely populated villages and does not shut down rural post offices because they may be unremunerative. In this matter of rural railways a far more sensible economy would be to provide a one-class diesel railcar, abolish all intermediate station staff, and let the guard issue tickets. This would be fairer to large families, persons carrying bulky luggage, and others who are certainly not popular on heavily laden bus routes.—*From a letter to " The Daily Telegraph."*

Victorian Bridge Renewal

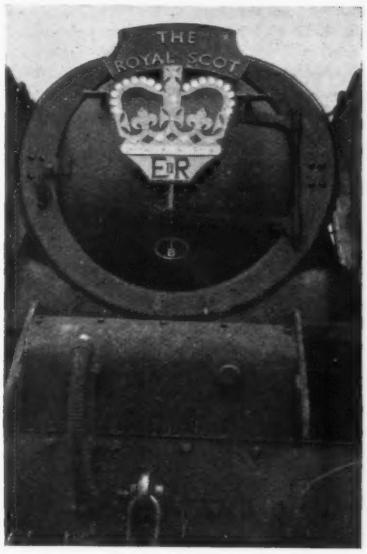
For the second time in its 95 years the Stony Creek Bridge, between Yarraville and Spotswood, is undergoing a major operation to give it yet another sound lease of life. The original box girders are being removed, and the cross girders are being replaced. . . . The order for the Stony Creek Bridge was included in the first batch of contracts issued, in June, 1856, by the newly-formed Victorian Railways Department. The ironwork for the bridge was manufactured in England by Pets, Brassey & Belts for £2,034.—*From the " Victorian Railways News Letter."*

Unsolicited Advertisement



A cartoon in the " Canadian National Magazine " looks forward with mixed feelings to the end of hot boxes

Coronation Emblem



One of the crown plaques carried on the front of locomotives hauling L.M.R. named expresses during the Coronation period

" In Vino "

(Railway restaurants are displaying leaflets recommending wines to be used with the various dishes)

How nice to find beside one's plate
Something to make one contemplate
Some rosy-tinged existence where
Enchanted castles rise in air !

To sip, whilst waiting for one's train,
Rare vintages of France and Spain,
Or, Keats-like, roll around one's mouth
A beakerful from the warm South.

How nice to dream of things that I,
For one, cannot afford to buy;
That's why I'm more than thrilled to learn
The inner mysteries of Sauterne.

I munch my bit of bread and cheese
And study Claret at my ease,
And one day I may cause a shock
By ordering half a glass of Hock.

It would be grand to ring a bell
And call for Champagne and Moselle,
Though, nowadays, I sadly fear,
My purse will hardly run to beer.

Thank you, Hotels Executive,
For all the pleasure that you give,
But, as things are, alas, the wine
Must still be yours—the thirst be mine.

All things considered, then, H.E.,
Don't think us too uncouth if we
Timidly venture to explain
We've only come to catch a train !

PLACIDUS

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

INDIA

North-South Metre-Gauge Link

The 187-mile line authorised between Khandwa and Hingoli, referred to in our March 20 issue, will be begun this year. It will link for the first time the two metre-gauge networks of the country. Khandwa is the terminus of the 394-mile branch from Ajmer on the Western Railway.

The need to tranship has long hampered the free movement of goods and passenger traffic between the northern and southern metre-gauge systems. Locomotives and rolling stock being transferred from one system to the other have to be loaded on to broad-gauge wagons.

The new line will pass through the Nimar and Akola district of Madhya Pradesh and Parbhani district of Hyderabad State. The total cost of construction will be about Rs.7 crores with an expected return on the capital cost of 3½ per cent in the sixth year after opening. Completion of the link will provide through metre-gauge communication from Bhatinda in Patiala in the north to Trivandrum and Tuticorin in the south, obviating transhipment at Guntakal and Bangalore City, and from Mormugao in the west to Tinsukia in Assam in the east, obviating transhipment at Manmad and Khandwa.

SOUTH AFRICA

Road Motor Services

The road motor services which operated over 26,465 route miles as at March 31, 1953, covered 19,032,043 miles during the first ten months of the financial year 1952-53. This is an increase of 584,917 miles over the corresponding period of the previous financial year when the vehicle mileage amounted to 18,447,126.

There was an overall increase in the volume of traffic conveyed by road motor services during the ten months ended January 31, 1953. In this period 14,652,173 passengers were carried compared with 13,495,690 during the first ten months of the financial year 1951-52, and the total tonnage of goods transported advanced from 1,611,541 to 1,623,948. There was also an increase of 3,430 head of livestock, but the drought during the first half of 1952 had an adverse effect on cream traffic which decreased from 6,628,910 gall. during the first ten months of 1951-52, to 2,272,389 gall. in the corresponding period of the financial year 1952-53.

CANADA

Toronto Rapid Transit Progress

By April 17 a total of 28,300 ft. of main line running rail, of a total of 32,500 ft., had been laid in the underground section of the Toronto rapid transit line, extending eastwards under Front Street from Union Station and thence northwards to Eglinton Avenue. On the open section 7,900 ft. of a total of 18,000 ft. had been laid.

"Picture Window" Box Car

The use of a "picture window" box car is being planned by the Canadian National Railways to reduce loss and damage claims. One side of a standard steel-sheathed box car is being made of plexiglass. The car will tour the C.N.R. system, visually demonstrating to train and yard crews and to freight personnel the effects of normal and overspeed coupling on its dummy lading. It will also be used to show consignors improved methods for packaging, crating, loading, bracing and securing.

Other features of the car include a speedometer at one end. At the other there is a 3-ft. dia. speedometer for gauging the speed of the car to be coupled to other units in a train before impact. Three hatches at each end of the roof will give another perspective of the lading before and after demonstrations. Electric lights, set in shock-proof sockets, will provide interior illumination for night use. The plexiglass panels will be set in rubber to absorb their expansion under heat and cushion them against shock. An inner metal screening will protect the plexiglass against contact with the lading. Plywood panels will fit over the plexiglass when the car is being moved between terminals, making it possible for it to carry revenue traffic.

Gauge Conversion in Newfoundland

Newfoundland Members of Parliament have appealed for the modernisation of the Newfoundland narrow-gauge lines of the C.N.R. It has been suggested that the line should be converted to standard gauge and extended to parts of the island now without railways. Instead of incurring further expenditure on new narrow-gauge stock and locomotives, the conversion should be undertaken now.

Point St. Charles Shops Extension

An extension that will more than double the size of its Point St. Charles diesel-electric shop is announced by the Canadian National Railways. It will provide new facilities for servicing the growing number of diesel-electric locomotives. The main feature of the extension will be a drop table, a type of lift used for removing and replacing locomotive wheels and bogies. The table will span the width of the shop and will service five tracks and pits. Other facilities include a five-ton capacity overhead crane, a raised inspection platform, quarters for storing diesel parts, and a lunch room for shop employees.

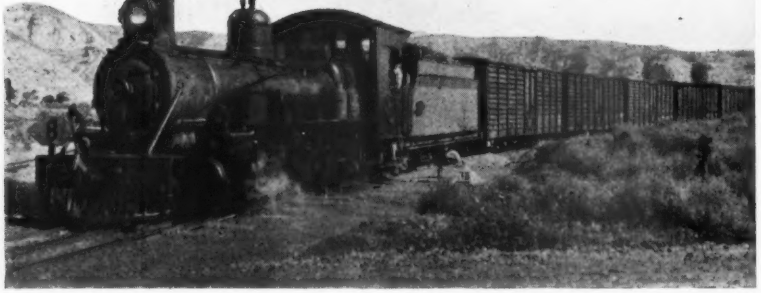
BRAZIL

Railway Merger

Five Sao Paulo State railways, the Sorocabana, Araraquara, Sao Paulo-Minas, Bragantina and Monte Alto are to be amalgamated. All are of one-metre gauge. Two other State-controlled lines, the Campos do Jordao and Mogiana, may be included later.

The financial results of the Sorocabana operations have improved steadily between 1950, when the deficit for the year was £2,794,000, and 1952, when a small surplus was recorded. Work will begin in June on an extension from Presidente Prudente to Ponta Pora, on the Paraguayan border. The Sorocabana administration points out in a recent study that, between 1951 and

A South African 2-ft. Gauge Line



Photo] [F. H. Worsfold

A Baldwin-built 4-6-2 hauling a goods train on the 2-ft. gauge Langekloof Light Railway of the S.A.R. in Eastern Cape Province

1952, steam haulage decreased by 14·7 per cent, but electric and diesel traction increased 18 and 34·97 per cent, respectively. It recommends extending electric traction. The cost per ton-km. of steam haulage is estimated at 17s. 2d., of diesel traction, 3s. 5d., and of electric, 1s. 11d.

Traffic over the Araraquara Railway increased five per cent between 1951 and 1952, but last year ended with the relatively heavy deficit of £786,000. Tariffs have been maintained unaltered since 1949 in spite of the increase in wages and social service payments. On the Bragantina the deficit on last year's operations rose to £158,000, on the Sao Paulo-Minas, £210,000, and on the Campos do Jordao, £168,000. The total deficit of the Sao Paulo State railways reached £1,322,000 in 1952.

The Sao Paulo Legislative Assembly has authorised an annual subsidy of 150,000,000 cruzeiros (£3,000,000) in 1953 and 1954 to the Companhia Mogiana "in view of the progressive deficits" of the line.

UNITED STATES

New York City to Acquire Rockaway Line

The Interstate Commerce Commission has granted permission for the City of New York Board of Transportation to acquire and reconstruct the 14½-mile Rockaway line of the Long Island Rail Road. Work will begin soon on the dredging to construct an embankment across Jamaica Bay to replace the partially burned trestle. Resignalling to New York City Transit System standards will cost nearly $10,000,000 of the $54,000,000 estimated as the total cost of the whole scheme, which it is planned to complete late in 1955.

Niagara Junction Railway

Seven new 96-ton electric locomotives built by the General Electric (U.S.A.) were put in service recently by the Niagara Junction Railway, which is jointly owned by the New York Central, Erie, and Lehigh Valley, since their acquisition of its capital stock in 1948. It is a "bridge" line connecting these railways with the Canadian National, Chesapeake & Ohio, Grand Trunk, and Wabash systems, and owns 40 miles of track. The Niagara Falls Power Company was responsible for the inception of the line in 1892, and the low cost of power generated from the falls resulted in electrification in 1913, at 600 volts d.c. with overhead conduction. With the many industries now taking power from the falls, traffic over the Niagara Junction has increased by 575 per cent since 1905.

Pittsburgh Strike Settlement

In March the Union Railroad of Pittsburgh, which is controlled by the United States Steel Corporation, was subjected to a "go slow" movement by its employees, led by two conductors who were suspended for ten days in consequence. The suspension resulted in a strike, which cost the Corporation 100,000 ingot tons of steel and more than 90,000 tons of coal. Mediation followed, and the Brotherhood of Railroad Trainmen condemned the action of the two conductors; "the carrier," the Brotherhood declared, "is entitled to, and the employees are under obligation to perform a reasonable day's work of eight hours." The Brotherhood added that it would not condone slowdowns, and would join with railways in taking all necessary and reasonable steps to eliminate them. The two conductors were then suspended for a month, and their reinstatement was made conditional on their demonstrating their agreement with the principles just stated. Such decided action by one of the men's unions in support of a railway, against two of its members, has been rare in the U.S.A.

FRANCE

Diesels in Western Region

The S.N.C.F. is studying the possible economic and operating advantages of replacing steam locomotives on medium-traffic lines in the Western Region by 1,500-h.p. diesel-electric locomotives.

Rail/Road Co-ordination

Reference was made in the March 6 issue to an agreement for the co-ordination of long-distance rail and road freight services. The committee has already met on a number of occasions to divide the country into the territorial regions set out in the agreement.

The committee comprises at present five representatives of the Road Haulage Association, four of the S.N.C.F. and three of other interests. The S.N.C.F. representatives are M. Marois and M. Lohier of the Commercial Department, M. Guibert, General Manager of the S.N.C.F. road transport subsidiary (S.C.E.T.A.), and M. Bidet. One secretary is provided by the S.N.C.F. and one by the Road Haulage Association.

WESTERN GERMANY

Long-Welded Rails

The good working results obtained on the sections of the electrified Munich-Augsburg main line laid with long-welded rails in 1951 and 1952, as reported in the July 11, 1952, issue, prompted the Federal Railway to extend the installation on this line. Hitherto, long-welded rails were laid on both tracks between Munich and Pasing 4½ route-miles, and on one track between Pasing and Maisach, 10¾ miles. The work of dismantling the second track on this section, and of replacing it by long-welded track on reinforced concrete sleepers was completed in 15 days in April; the daily average length laid was 4,264 ft.

All five working and materials trains in service on the section had wireless communication between them and headquarters. The dismantling installation consisted of five travelling portal cranes driven by two 15kW. motors each. Other motorised large-size plants included two 7½ *tonne* ballast-scraping caterpillar machines, four vibromax machines, a 7 *tonne* ballast roller, a ballast edging machine, and a machine for laying reinforced concrete sleepers. In addition, two portal cranes for transferring loads were used.

In spite of the difficulties caused by the dense traffic—a daily average of 190 trains with goods trains totalling some 40,000 *tonnes* of loads—the work proceeded expeditiously and without hitch. A few minutes after the completion of the work an express train travelling at 74½ m.p.h. was allowed to pass over the new track. It is intended to operate demonstration trips for railway officials only over the sections concerned during the period of the coming Munich transport exhibition; speeds of up to 112 m.p.h. may be attained.

BELGIUM

Brussels Junction Line

On May 17 all traffic at Brussels Nord was concentrated at the new high-level through station and the old terminus has since been out of use. Since May 18 the new intermediate station at Chapelle (Halte de la Chapelle) has been open on weekdays between 6 and 9 a.m. and 4 and 7 p.m.

U.S.S.R.

New Stations in Latvia

The Soviet Government is reported to have allotted some 20,000,000 roubles since the war for the construction of new stations in Latvia. So far, 55 new stations have been erected, including large buildings at Daugavpils and Sigulda.

IRELAND

Concrete Sleepers

Extended tests with concrete sleepers are to be made by C.I.E. Later this year it is to manufacture 15,000 sleepers of this type. Only a small percentage of requirements of timber sleepers can be supplied by the home market, most coming from France. Special equipment will be installed at Inchicore to manufacture and handle the sleepers, including Vibrators for the production of high-strength concrete.

New Turf Board Railway

Bord na Mona (Turf Board) is laying a 2 ft. 6 in. gauge line from Garryhinch Bog to Portarlington Power Station. The line, which will pass under the C.I.E. branch from Portarlington to Athlone, will carry approximately 40,000 tons of turf yearly to Portarlington Power Station. The first of the Board's narrow-gauge lines was laid in Clonsast Bog about 15 years ago.

PUBLICATIONS RECEIVED

Four Thousand Miles on the Footplate. By O. S. Nock. Hampton Court, Surrey: Ian Allan Limited, Craven House. 8¼ in. × 5½ in. × 1 in. 223 pp. Illustrated. Price 17s. 6d.—In this, the third of his books on footplate experiences, Mr. O. S. Nock has turned chiefly, though not entirely, to secondary main lines. He describes some exhilarating runs on such difficult roads as Tonbridge-Hastings, Shrewsbury-Aberystwyth, Carnforth-Whitehaven, and Plymouth-Penzance, with their attractive scenic backgrounds. Mr. Nock rode on many classes of locomotives, from "Cauliflowers," on the Cockermouth, Keswick & Penrith line, to "Britannias" soon after their introduction to East Anglia and the West Country. One of the best things in the book is the account of a journey on the northbound "Capitals Limited" in 1951 when *Woodcock*, though indifferently steaming, regained 38 min. lost by a late start and checks south of Doncaster.

"Odin" og "Roeskilde." ("Odin" and "Roeskilde.") Published by Dansk Lokomotivmands Forening (Danish Locomotivemen's Association). 88 pages. 12½ in. × 9¾ in. 91 photographs. No price stated.—This well-produced album presents a record of the development of the locomotive in Denmark, from *"Odin"* used on the Copenhagen-Roskilde line in 1847, and *"Roeskilde"* used on the Roskilde-Korsör line, opened in 1856, to the most modern diesel-electric 1,500 h.p. machine in service on the present State system. This development was marked, as far as steam traction is concerned, by three principal stages, the first in which the single driving wheel engine prevailed, the second in which four- and six-coupled machines were used, and the third in which eight-wheel types in various forms, both simple and compound, became general, and refinements such as superheating more frequently applied. The photographs, nearly all whole-page views of a single locomotive, are excellently chosen and the work forms a most attractive presentation of the course of Danish motive power history, of great interest to students and admirers of the locomotive. Electric rolling stock and internal combustion railcars also are covered.

The Annual Report for 1952 *of the Timber Development Association.* London, 21 College Hill, E.C.4. 101 pp. 7½ in. × 5½ in. Paper cover. Illustrated.—From the 19th annual report, the energies of the association during 1952 seem to have been concentrated largely on convincing the Minister of Materials of the many sound reasons for the removal of softwood from consumption licensing. At the same time, foundations are laid for a change in research policy, enabling urgent work to be carried out more rapidly and as complementary to that of the Forest Produce Research Laboratory without their overlapping. Publicity activities included a press conference, broadcasts and television features, contributed articles, and participation in the Scottish Building & Civil Engineering, the Manchester Building, and the Furniture Exhibitions, also in the Royal and the Royal Highland Shows. Permanent exhibitions were maintained at the London and Glasgow Building Centres; the displays are described and illustrated. Four quarterly reviews and 18 new publications appeared during the year. The report also describes the latest design and construction developments and the mechanical testing of plywood and timber generally.

The Fight against Rust: The work of the Corrosion Committee of the British Iron & Steel Research Association. Published by the Association at 11, Park Lane, London, W.1. 25 pp. 10 in. × 6½ in. Illustrated. Price 2s. 6d.—In an introduction to the activities of the committee, a description of what rust is and what causes it is followed by some figures of its cost. In the United States this is estimated at £2,000 million a year, and in Great Britain it is probably £200,000,000, the cost of painting the 600 sq. miles of all steel produced in this country. Illustrations and descriptions of corrosion caused by air, by water, and by soil are included. Systematic tests of specimens are carried out at 14 exposure stations spread over the Eastern Hemisphere from Abisko in the Polar Circle to South Africa and from Wales to Singapore, and results are shown in diagrams. Forms of protection are given, such as cathodic methods, metallic and paint coatings. Exposure of steel to alternating stresses and corrosive conditions acting together causes "corrosion-fatigue," one of the most rapid forms of deterioration. Resistance to it in certain liquids is increased by "peening," or bombardment of the surface, with hard shot. Corrosion inhibitors are also discussed in the report.

Gear Lubrication.—The Vacuum Oil Co. Ltd. has recently added to its list of technical publications dealing with lubrication problems. Like earlier manuals in this series, *Gear Lubrication* is directed not so much to the gear designer as to the operator. To help him understand the equipment under his control, the basic principles of gears are explained, and the evolution of the complex profiles of today from the pegged wooden wheel of early times is briefly mentioned. The principles of tooth action are described, and the types of gear in common use are discussed and illustrated. The book is intended to be of practical value to the operator, and the causes of failure are dealt with in unusual detail. Damage likely to be encountered with gears that are incorrectly operated is indicated, and a guide is provided to the differences between pitting, flaking, scuffing, galling, and so on. The book concludes with a glossary of technical terms commonly used in dealing with gears.

Blue Finish Dormer Tools. — The Sheffield Twist Drill & Steel Co. Ltd., is imparting a blue finish to its Dormer twist drills, details of which are given in a folder published by the firm. Among the advantages claimed for the process are removal of grinding stresses imparted during manufacture, whilst the surface is almost impervious to rust. It is also claimed that the cold welding of chips to the edges is reduced, thereby lessening the amount of regrinding necessary, and the porous nature of the coating enables the surface to absorb lubricant with consequent reduction in friction when drilling.

Nimonic Alloys.—Henry Wiggin & Co. Ltd. has issued a revised edition of a publication giving detailed properties of Nimonic high-temperature materials. Long-time creep tests shown graphically in the booklet now include the creep curve for Nimonic 80A at 700° C. with a load of 7 tons per sq. in., the specimen fracturing at 34,065 hours, giving a strain of approximately 1·15 per cent. Also included are short notes on Nimonic 95, the latest published addition to the series of creep-tested wrought alloys, together with general description of Nimonic DS and Nimonic DT, which are modifications of Nimonic D introduced recently.

Design of Welded Structures.—The Quasie-Arc Co. Ltd. has issued two further brochures of its series on the design of welded structures. The first discusses the design considerations of component parts of welded plate girders, their fabrication, and other practical factors involved. A complete design of a 30-ft. plate girder is given in detail, considered from the point of view of economy in cost and material. The second gives a series of simple formulæ to enable designers to deal with all types of single bay, single-storey portal frames without having a detailed knowledge of the theory of rigid frame analysis. The formulæ are divided into three main sections according to the particular properties of the frames.

British Railways Scottish Tours Programme. — The programme of Scottish tours for the 1953 season issued by British Railways gives details of the many tours by train, motor, and steamer through mountain, glen, and loch scenery. By description and map the booklet makes it simple for travellers to follow the tours throughout. There are many day trips to the lochs and glens of the West, with, for longer tours, brief descriptions of places of interest *en route*.

Observance of Signals

A study of the principal factors involved in the investigation of signal irregularities

(From a Correspondent)

SEVERAL serious mishaps arising out of the failure of enginemen to observe signals have lately focused attention on automatic train control devices, and it has been announced that British Railways intend to proceed with a scheme for the installation of this apparatus on important lines at considerable cost. The fulfilment of this scheme must, if only for economic reasons, take a considerable time and, in any case, the ultimate responsibility for proper observance of signals must remain with the driver.

Whether or not there has been any deterioration in the observance of signals, compared with years gone by, is a question which has exercised the minds of motive power officers, together with the causes and the remedies. Recent events may, at first sight, appear to have answered the question in part, but it must be pointed out that signal irregularities are not necessarily accompanied by fatal, or even serious, results; rather, it is possible to conclude that recent irregularities have been coincident with the most unfavourable circumstances, of which the Harrow disaster was a tragic example.

The problem of correct observance of signals by drivers is, of course, as old as the railways, and that one former main-line railway company chose to install a system of A.T.C. many years ago, and deservedly acquired credit for its achievement, is a reminder that the necessity for this safeguard became the mother of the invention. Train stops have long been in use on the London underground railways, and trials of train control devices have been made in the past. The desire to provide better operating conditions during fog, when A.T.C. is a distinct asset, has been merely incidental.

Analysis of Circumstances

A survey of signal irregularities over a long period reveals certain features which have been common to most of them. For example, the majority of cases have occurred in the day time. Driving in darkness requires greater concentration than in daylight and there are certainly fewer distractions to turn the driver's attention and his thoughts away from the job in hand. In several instances, mistakes have occurred shortly after a period of bad visibility, such as fog, falling snow or heavy rainstorms, which suggests than an improvement in weather conditions during a journey may cause a driver to relax his attention slightly.

It is unfortunately true that signals in the most prominent positions, with excellent approach views, are liable to be passed at danger. One particular signal which had been overrun on a number of occasions over a period was submitted to the opinions of the drivers concerned, but no grounds for criticism of its position could be offered. On the other hand, signals which for various reasons cannot be ideally located have seldom, if ever, been overrun, for the obvious reason that they are known to require a cautious approach.

Unpredictable Lapses

Signal offences are not, on the whole, committed by drivers of any particular age group. Even the most experienced driver may have his lapses. It has been suggested that the need for additional drivers during the war, accompanied by some relaxation in the standards required to qualify, might have led to a lowering of standards of safety in the observance of signals, but there is no evidence to support this contention. There always have been, and doubtless always will be, one or two individuals who fail to turn out well and who have to be relegated to lower grade work, but these are exceptions. Rather, it is the type of driver who has a clear record over a long period who is just as likely to be involved in signal irregularities as a passed fireman of short driving experience. Differences of temperament of individual personalities do not seem to have any relation to the problem, and the number of cases in which there is any question of medical or eyesight deficiency is also negligible.

There is no doubt about the ease with which drivers may be tempted to take things for granted. A distant signal, for instance, that is habitually left in the caution position because a train is booked to stop at the station, can lead a driver to take insufficient notice of an outer home signal. The driver of an important train which gets a clear pathway day after day may also be caught off his guard.

The disciplinary machinery provides for the most careful and considerate treatment of enginemen who commit signal offences, and the opportunity is always taken to discover any psychological factors, particularly in regard to any worries or domestic difficulties which might have weighed on the driver's mind at the time. Mental anxiety, however, rarely appears to have any bearing on such accidents. All too often, the driver cannot account for his error at all, and may need to be convinced that the signals were actually against him.

There remains the question of fatigue. It was at one time pertinent to investigate whether the offender had been on duty for a long period, or had short rest between spells of duty. The length of duty and the intervening rest periods are now governed by National Agreements, and with reduced working hours there is no reason to attribute any lack of concentration to fatigue.

The conclusion can be reached that lack of concentration is the common denominator of 99 per cent of signal irregularities. The causes are as obscure as the workings of the human mind. Absent-mindedness has become a legendary attribute of the professorial mind, so occupied with intellectual interests that it cannot cope with mundane matters, but in this present age we are all liable to let our minds become occupied with so many interests, that concentration is impaired. News and entertainment are provided in a continuous stream by papers, wireless, and television. Increased leisure, such as the introduction of the fortnightly rest-day for enginemen, brings with it the opportunity to develop interests of many kinds.

The value of these improvements in working conditions, and their contribution to a fuller life can scarcely be denied, but we are all the more liable to let our minds wander away from our work, especially when the conditions of work do not fix our attention all the time.

Need for Self-Discipline

A visitor to a mass-production factory paused to ask a machine-operator if he found any pleasure in his routine job, to which the man replied that he was so accustomed to the operations that he could think of other things while he worked. The duties and responsibilities of train driving can hardly be thought of in terms of machine-operating, but there is obviously a danger in monotony. Concentration is an act of will. This is a matter of self-discipline, and although discipline has become an unpopular word in a freer society, no alternative has yet been discovered. Discipline must be applied, either by the individual himself or, failing this, by those who are qualified to administer it.

DESPATCH OF AGRICULTURAL MACHINERY FROM FORD WORKS AT DAGENHAM.—A consignment of agricultural tractors and implements from the Ford Motor Co. Ltd. Dagenham factory was loaded at Dagenham Dock station, Eastern Region, on May 26. Tractors and implements were being carried by rail to the Bath & West and Southern Counties Society Show held at Claverton Down, Bath, on June 3-6. The tractors were loaded in special motor car vans and the implements in containers, with straw pads, giving complete protection to preserve show finish. The consignment consisted of nine tractors and a large quantity of implements.

B.R. Standard 0-6-0 Diesel-Electric Shunting Locomotive

Designed with a view to providing the widest possible route availability

A NUMBER of 0-6-0 diesel-electric shunting locomotives to a new British Railways standard design has already been put into traffic. These engines have been built at Derby Works to the requirements of Mr. R. A. Riddles, Member for Mechanical & Electrical Engineering, Railway Executive, and have been allocated for operating purposes as follow:—

Nos. 13000-13004	Western Region
,, 13005-13009	Scottish Region
,, 13010-13014	Southern Region
,, 13015-13024	London Midland Region

The locomotives have been designed at Derby. The layout generally follows that of the more recent Regional designs of diesel-electric shunter with nose-suspended traction motors and double-reduction gears, but certain modifications have been made to suit operating requirements and to give the locomotives the widest possible route availability. In addition, provision has been made for using diesel engines and electrical equipment from a number of manufacturers with a minimum of alterations to the main locomotive structure. The maximum speed is 20 m.p.h. and the total weight is 49 tons in working order.

Engine and Cooling System

The engine used in the locomotive is the 6KT manufactured by the English Electric Co. Ltd., having six cylinders 10 in. bore × 12 in. stroke, and giving a maximum output of 400 b.h.p. at 680 r.p.m. The governed speed of the engine is variable between 300 and 680 r.p.m., while producing full torque. Cylinder liners are of the wet type and the engine has a wet sump. A hand-operated lubricating priming pump is provided.

Exhaust gases are taken through a water-cooled manifold to the silencer box mounted behind the radiator top header. Filters are provided for air, fuel oil, and lubricating oil systems.

The radiator is built up of elements of the Serck type, seven for water and four for lubricating oil. Cooling water circulation is by means of an engine-driven centrifugal pump, while an induced-draught fan, belt-driven from the engine crankshaft, draws air through the radiator. Hand-operated shutters are fitted for control of cooling water temperature, and adequate water capacity is provided in the header tanks for evaporation losses. Low-level filler pipes of carriage type are fitted.

Main and service fuel tanks are of welded construction and are of sufficient capacity to provide for 10-15 days shunting before refuelling. A Bayham dial contents gauge is fitted to each tank, and filling is through a self-sealing Lockheed-Avery coupling. A hand-operated transfer pump is fitted in the cab for daily filling of the service tank.

The main generator is directly coupled and rigidly attached to the engine, with which it forms a unit carried on a 3-point mounting on the locomotive frames. It is a self-ventilated, separately excited d.c. machine with 6 poles and interpoles, and is continuously rated at 441 amp., 430 V. at 680 r.p.m. A separate starting winding is provided for motoring the generator from the battery to start the diesel engine. An auxiliary generator, mounted above and belt-driven from the main generator shaft, provides current for battery charging, lighting, control, and compressor and exhauster motors. It is continuously rated at 13·5 kW. at 90 V.

Traction Motors and Control Gear

Two traction motors are provided, on the leading and trailing coupled axles, and are of English Electric standard design, with roller bearings on the armature shaft. The double-reduction gearing gives a ratio of 23·9:1 to the road wheels. The motors are force-ventilated from a fan, belt-driven from the main generator shaft, and each is continuously rated at 280 amp., 400 V.

Engine speed and generator output are controlled from a cubicle in the driver's cab. The controls are duplicated and consist of reverser and controller handles, which are interlocked to prevent faulty operation. A master switch, with detachable key, is mounted on the right hand side of the cubicle, and meters and gauges are mounted on an inclined panel above the cubicle.

A deadman's pedal device prevents power being applied to the locomotive unless the pedal is depressed, and a short delay action enables the driver to cross the cab to the opposite position before the device operates. A locomotive speed indicator, with the main ammeter, is mounted on a swivel bracket above the control cubicle.

The main generator field resistances are frame-mounted in the main generator

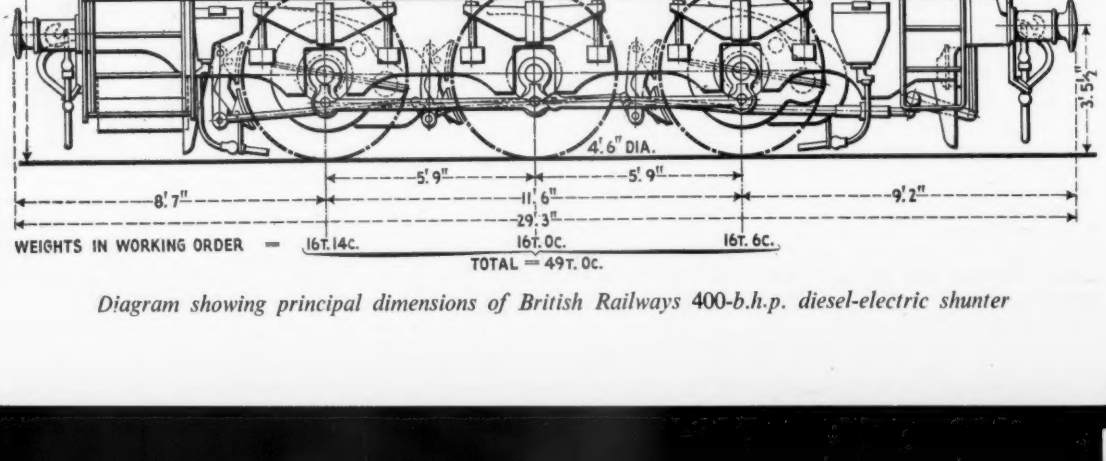
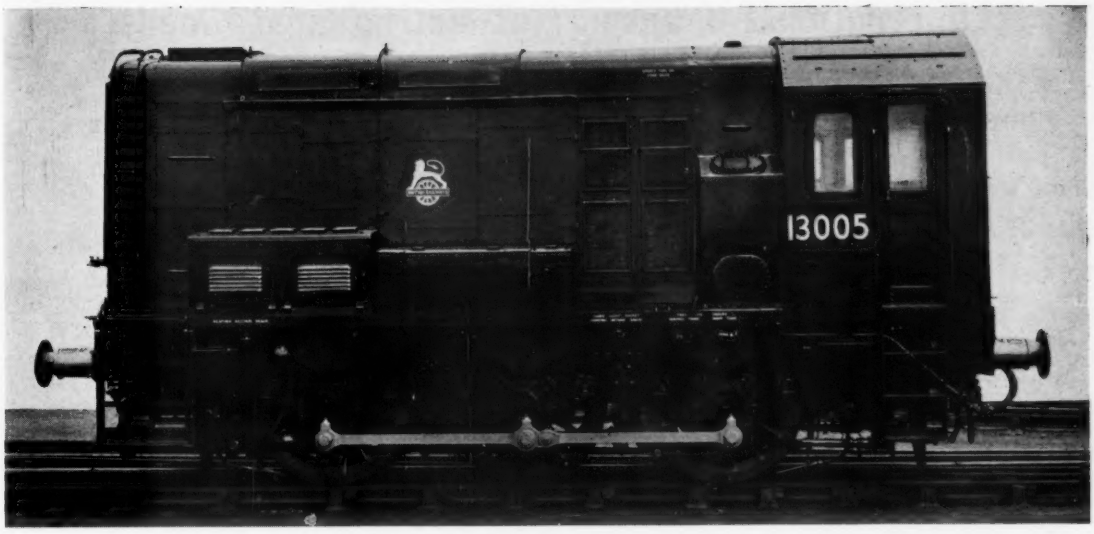


Diagram showing principal dimensions of British Railways 400-*b.h.p. diesel-electric shunter*



British Railways standard 400-b.h.p. Derby-built diesel-electric shunting engine

compartment. On the back of the cab is fitted a Newton carbon-pile voltage regulator which maintains 90 V. across the battery, control and lighting circuits, and for the compressor and exhauster motors.

The battery consists of 40 lead-acid cells manufactured by the D.P. Battery Co. Ltd., having a capacity of 108 amp.-hr. Five four-cell monobloc units are housed in each of two battery boxes, mounted one on each side of the locomotive superstructure.

Locomotive Frame Design

The main frames are of 1-in. plate and are positioned outside the wheels. They are rigidly stayed by front and rear dragboxes of pressed and riveted construction, and by intermediate stretchers and the engine/generator support. Rubber pads are fitted under the feet of the power unit pedestals.

The coupled wheels are of 4 ft. 6 in. dia., this size having been dictated by the need for the coupling rods and cranks to come within the L1 rolling stock gauge. Axleboxes are of cast steel, with pressed-in horseshoe brasses lined with whitemetal, working in cast steel guides. Overhead laminated springs are of carbon steel, with screwed adjustable links. A platform is provided at the front end on either side, to accommodate the shunter when riding short distances.

The engine housing framework is welded from rolled-steel sections, with ample access doors to the power unit; the roof over the engine slides rearwards to enable maintenance to be readily carried out. The cab is fully enclosed, and drop lights are provided, the front and rear windows being hinged. Heating is effected by tubular radiators taking hot water from the engine cooling system. Two adjustable upholstered stools are provided, and an electric food warmer fitted. Electric lighting is provided in the cab and electric marker lights are fitted to front and rear of the engine to enable the standard code indication to be displayed. Four Kidde carbon-dioxide fire extinguishers form part of the equipment provided.

The locomotive is equipped with a system of straight air brake, with controls for the vacuum-operated brakes on freight trains. The air brake is controlled by a self-lapping brake valve used in isolation, for normal shunting work, but when handling a vacuum-fitted train the vacuum brake controls are used, giving the normal automatic action in case of a breakaway, and controlling the application of the locomotive air brake in synchronism with the vacuum brake, through a proportional valve.

Compressed air for the locomotive brakes, sanding gear, and whistle is maintained by a motor-driven compressor governed to maintain a main reservoir pressure of 65-85 lb. per sq. in. Two motor-driven 3-cylinder exhausters, mounted on bedplates incorporating silencers one each side of the engine housing near the front of the locomotive, maintain the vacuum in the train pipe. These have two running speeds, 730 r.p.m. for normal maintaining and 950 r.p.m. for effecting brake release, the fast speed being brought in by depression of a trigger on the vacuum brake valve handle.

Application of the vacuum brakes on the train isolates the exhausters from the train pipe by means of electric contacts on the brake valve spindle and an electric exhauster cut-out valve. Both air and vacuum brake valves can be operated from either side of the cab.

Two 13 in. dia. × 6½ in. stroke air brake cylinders apply two articulated brake blocks to each wheel through fully compensated brake rigging. Weslak automatic slack adjusters are fitted. The brake rigging is grease-lubricated. Ancillaries using compressed air are the whistle, sanding—with provision for both directions of travel—fuel raising connection, the latter through a reducing valve to 10 lb. per sq. in., and coupling head beneath the rear buffer beam.

Proprietary Equipment

The following is a list of the principal manufacturers of proprietary equipment used:—

Power equipment	...	English Electric Co. Ltd.
Braking equipment, slack adjuster, whistle, etc.		Westinghouse Brake & Signal Co. Ltd.
Buffers	...	Geo. Turton, Platts & Co. Ltd.
Batteries	...	The D.P. Battery Co. Ltd.
Instruments	...	Record Electric Company
Gears	...	Alfred Wiseman & Co. Ltd.
Voltage regulator	...	Newton Bros. (Derby) Ltd.
Radiator elements	...	Serck Radiators Limited
Radiator shutters	...	Spiral Tube & Component Co. Ltd.

B.S. FOR LARGE ALUMINIUM ALLOY RIVETS.—A new British Standard (B.S. 1974:1953) has been issued for large aluminium alloy rivets which are intended for use in the general engineering and shipbuilding industries, and has been confined for the present to the range of rivet types and sizes now coming into current use. It provides for the following types of rivets: small snap-head rivets, conical head rivets, small pan-head rivets, rounded or flat countersunk head rivets, and shallow rounded or flat countersunk head rivets. Materials, dimensions and head shapes of the rivets of nominal sizes ranging from ½ in. to 1 in. dia. are specified. A table of dimensions for each type of rivet is included. Two appendices have been included in the standard. One describes a method of determining ultimate shear stress of rivet stock and manufactured rivets and the other indicates recommended point shapes for driven rivets and outlines in brief the main requirements for satisfactory driving of large aluminium alloy rivets. Arrangements are being made to review this standard in about two years' time. Users of this edition are therefore invited to submit to the Institution any comments and suggestions they may wish to make for this revision. Copies may be obtained from the British Standards Institution, Sales Branch, 24, Victoria Street, London, S.W.1. Price 4s.

International Transport of Refrigerated Goods

Considerable development of traffic since the war as the result of close co-operation between operating administrations

By William Purdom

THERE are three main types of wagon used for the transport of merchandise at a controlled temperature. The Interfrigo Company defines a refrigerator wagon as one fitted with ice bunkers and fans which ensure the distribution of the cold air throughout the wagon by means of ventilator shafts. An insulated wagon is fitted with either ice bunkers or fans and the required temperature is maintained by means of insulation fitted in the walls, floor and roof and, when very low temperatures are required, by the use of dry-ice, either suspended from the roof in nets or placed on the goods themselves. A mechanically refrigerated wagon is usually an insulated wagon in which there is mechanism for the production of cold. This mechanism can either be powered by a motor or from the axle.

The main difficulty of importing fruit, flowers, and fresh vegetables into Great Britain from Continental countries, such as France or Spain, is the crossing of the Channel and the difference in the technical requirements of rolling stock on the Continent and in this country. The obstacle of the Channel has been admirably surmounted by the introduction of ferry boats operating between Dover and Dunkirk, and Harwich and Zeebrugge. The origin of these services may be traced to the 1914-18 war, when, to meet the need to convey war materials and stores in bulk from this country to Army depots in France and Belgium, train ferry services were instituted between Richborough and Calais, and Southampton and Dieppe. Three vessels built for these services in 1917 were acquired by Great Eastern Train Ferries Limited, which was formed in 1923 to operate a service between Harwich and Zeebrugge in co-operation with a Belgian company, La Société Belgo-Anglaise des Ferry Boats, and under the control of the London & North Eastern Railway. In 1936 a second regular train-ferry service between Britain and the Continent was provided when the Southern Railway inaugurated the Dover-Dunkirk ferry.

These two ferry services enable goods to be loaded at most Continental stations and unloaded at any of the principal stations in Great Britain without any other handling than that required by the Customs and samplers at the ports. In general, traffic from the Iberian Peninsula and France passes *via* the Dunkirk-Dover ferry service, and that from Belgium, Germany, Holland and the Scandinavian countries *via* Zeebrugge-Harwich.

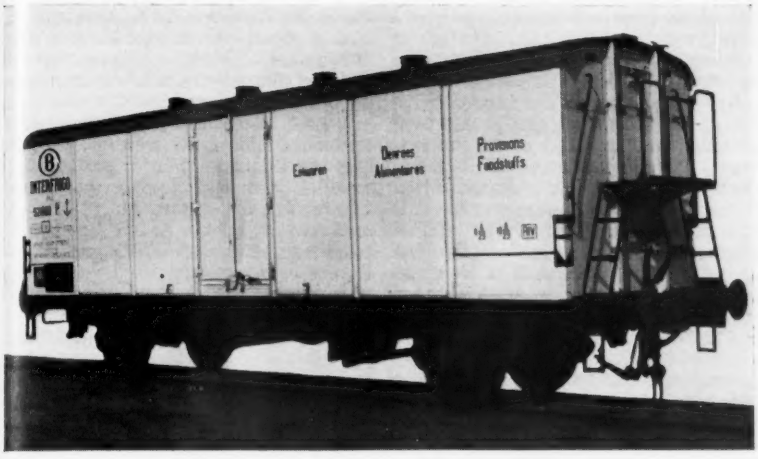
Traffic from Italy, Switzerland, Luxembourg, and the Balkans is divided between the two services according to the wishes of traders concerned, who, as a result of long-established connections and former rivalries, still have their favourite route for forwarding goods.

Interchangeable Axle Wagons

For traffic from Spain, Transfesa, a private Spanish wagon-owning company, has constructed a large number of refrigerator wagons fitted with interchangeable axles, which by means of installations at the Franco-Spanish frontier are changed for standard-gauge axles enabling them to travel over the lines of France, Britain, and other European countries.

It is hoped ultimately to initiate a service of ferry boats between North Africa and Algeciras, opposite Gibraltar, to open up traffic from North Africa not only to Spain and Portugal but also to other European countries. Traffic by this ferry would pass from the standard 4 ft. 8½ in. gauge in Morocco to the Spanish broad gauge, necessitating a change of axles. Undoubtedly, this service could be undertaken by Transfesa in the same way as is done at present with traffic passing over the frontier with

Interchangeable-axle wagons on arrival at the Southwark Depot of British Railways, conveying a consignment of apricots from Spain via the Dunkirk-Dover ferry



Fourteen-ton Interfrigo refrigerated van based on Antwerp

France. The possibilities of such a service are great.

It has always been evident that the greatest possible co-operation between European railway administrations was required to give traders an adequate service for the conveyance of perishable goods. For this purpose the Interfrigo Company began operating in 1950. This company is owned jointly by the railway administrations of Belgium, France, Great Britain, the Netherlands, Italy, Switzerland, Greece, Luxembourg, Western Germany and Spain, and has its headquarters at Basle. Its principal aims are building rolling stock and technical research into the best type of rolling stock and equipment ; hiring to and exchanging rolling stock between member railway administrations and facilitating the distribution of refrigerator wagons between all systems in such a way as to ensure the best use is made of existing stock ; working refrigerator traffic and the intensive co-ordinated development of such traffic ; full control of available wagons ; control of wagon movement to obtain the good turnround and user ; the use of commercial tariff policies sufficiently flexible to enable refrigeration to be commercially sound and, at the same time, encourage new traffic. Interfrigo advises member administrations on all matters such as international regulations and tariffs which might have an influence on the development of refrigerated traffic.

Interfrigo Wagons

Interfrigo has constructed just over 500 new refrigerator wagons, of which 350 are suitable for running over British Railways. These wagons, which were built in Switzerland, Belgium, and France, are fitted with end ice bunkers and fans to ensure the best possible circulation of cold air inside. The design was evolved by a committee formed of representatives of all the member administrations, and the new wagons therefore incorporate the results of research and experience in the transport of refrigerated goods by rail throughout Western Europe. They represent the last word in the technical development of refrigerator wagons, but the story does not end there for much has yet to be learnt of this comparatively young science. The research is being continued and experience is being acquired, and future designs will doubtless show a marked improvement even on the latest Interfrigo wagons.

Quick-Frozen Goods

Transport of quick-frozen goods on the Continent has developed to a certain extent, but by no means as much as in this country where British Railways have put into service a large number of heavily insulated containers suitable for the transport of goods at 0° F.

These containers, provided the requirements of internal traffic in Great Britain are met, are made available to a limited extent for traffic to Continental destinations. They are exceptionally useful for small consignments, such as samples, and for destinations not geographically suitable for ferry boat services. These containers have a capacity of 190 cu. ft., or just under three tons. Provided the time transit is not more than about 35 hours, the initial icing of about 75 lb. of dry-ice would maintain the original temperature with no greater variation than 3 or 4° F. Because of the heavy requirements of internal trade, few of these containers are available for international traffic.

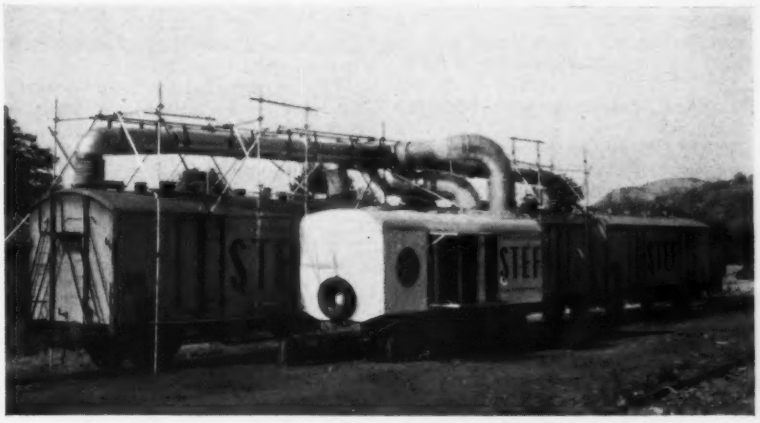
Interfrigo, with a view to encouraging the international conveyance of quick-frozen goods, has equipped ten of its wagons with a special interior fitting giving approximately the same insulation as the A.F. containers. These internal fittings divide the wagon into two loading compartments, separated by a corridor, which enable goods to be loaded and unloaded with a minimum contact with the outside air. These wagons have an average capacity of 700 cu. ft. or about ten tons, and, with this larger loading space, compared with the A.F. containers, are much more suitable for international traffic, as they enable traders to benefit from the lower railway rates which are available for traffic passing in larger lots, for example five and eight tons.

These highly insulated wagons are used fairly frequently to convey consignments from Great Britain to such destinations as Sweden and Italy. In general practice, when the goods are loaded in London, re-icing is arranged by the Interfrigo organisation at Zeebrugge and Copenhagen for Swedish traffic and at Basle for Italian traffic, which is generally sufficient if the traffic is not going beyond, say, Milan. From experiments made it has been found that traffic loaded at about 0° F. with the judicious use of dry-ice, varying according to the time of the year, arrives in Basle for re-icing with a temperature roughly the same as when loaded. It is evident that the quantity of dry-ice required for long transit is considerable, but so far a more economical way has not yet proved its merits.

Icing Arrangements

General icing arrangements in Europe vary largely from country to country and, as far as traffic to and from Great Britain is concerned, facilities for re-icing with water-ice exist in those countries through which the main currents of traffic pass.

In Spain before the use of Transfesa interchangeable-axle wagons there was



Wagons of the S.T.E.F. Company being re-iced

not so much reason for re-icing international rail traffic, as it was necessary for the goods to be transhipped at the frontier. With the through working of wagons, however, it has become more and more necessary to make arrangements for icing wagons in Spain; this is usually performed at loading points. Unfortunately, the traffic is often loaded in small wayside stations and, as a result, it is necessary for Transfesa to transport the ice from the nearest factory.

Icing is particularly necessary for the conveyance of apricots, and for such traffic passing through Madrid a check is made of every wagon and the necessary quantity of ice added. The next check of traffic passing *via* Hendaye is made at Irun, where the ice bunkers are topped up. For traffic *via* Cerbère, at the Mediterreanean end of the Franco-Spanish frontier, after a check-up at Barcelona, icing is generally arranged by Interfrigo at Cerbère on the French side of the frontier. Dry ice is difficult to obtain in Spain and the price is exorbitant.

S.T.E.F. Organisation

The Interfrigo organisation in France is under the management of the S.T.E.F. Company, which has numerous ice factories and cold stores fitted with rail sidings, such as at Paris, Dijon, Strasbourg, Avignon, Perpignan and Limoges. It also owns jointly with other interests installations in Swiss territory at Geneva and Basle. At all the above points wagons can be re-iced *en route* as well as at the principal frontier points, such as Modane and Dunkirk. At Dunkirk S.T.E.F. has its own representative who checks the quantity of ice left in each wagon before shipment and, in co-operation with local ice manufacturers arranges for the necessary quantity of ice to be added. It is also possible for goods to be pre-refrigerated at certain of the cold stores fitted with rail sidings. A typical example is that at Perpignan. Dry-ice in France is, generally, expensive and difficult to obtain except in the larger cities.

The principal Belgian re-icing point, as far as traffic to and from Great Britain is concerned, is at Zeebrugge, where the majority of the traffic for this country is re-iced. Dry-ice is expensive but may be obtained without undue difficulty. Extensive re-icing facilities as well as facilities for pre-refrigeration exist in Italy. The conditions applicable to the supply of dry-ice are similar to those in the other continental countries mentioned.

As the majority of the British traffic is consigned to London, it is rarely necessary to re-ice in this country. Water-ice is obtainable at the more important points, although at Dover and Harwich it is extremely difficult to obtain and rather expensive. The supply of dry-ice in Great Britain is highly organised as a result of the efforts of the principal ice suppliers who can arrange for large stocks to be made available at short notice at almost any station or port in the Kingdom. It is far better organised than in the majority of Continental countries where, as stated, supply is difficult, and the cost prohibitive—sometimes double that in Britain.

No matter what technical advantages are offered, cost is more than ever of the utmost importance. The expense involved in transporting goods requiring refrigeration is made up of the rail rate proper, handling charges at terminal points, and the charge for the use of the special refrigerator wagons. To this must be added the cost of icing and, if required, pre-refrigeration. The last items are the direct concern of Interfrigo and the charge raised for the use of Interfrigo wagons, termed a refrigeration surcharge and raised by the railways on behalf of Interfrigo, varies according to the length of the journey; for instance, from London to Marseilles it is £10.

It is sometimes argued by traders that no extra charge should be made for the use of refrigerator wagons. One can take as a parallel, however, warehousing in ordinary and refrigerated warehouses. When the greatly increased cost of a refrigerator wagon compared with that of an ordinary wagon is considered, it is evident that the additional services must be paid for.

The refrigeration surcharge is one of the sources of revenue of Interfrigo. If it is borne in mind that its wagons cost anything between £3,000 and £3,500, it is not difficult to understand that a considerable sum must be set aside each year to cover depreciation.

In addition to the cost of the wagons, heavy costs for maintenance and repairs have to be borne, In addition to using its own wagons, Interfrigo, when the demand requires, uses wagons hired from the railway administrations in Europe or their subsidiaries. Broadly speaking, in those countries which are members of Interfrigo any international refrigerated consignment comes under the control of Interfrigo. In this way, an international pool of wagons is available at the minimum expense in a large number of European countries at all times of the year, which would not be possible if the Interfrigo Company did not exist, as each country would have to build sufficient wagons to meet its own requirements, which are seasonal and which would perhaps necessitate the building of several hundred wagons, used only during two or three months.

As the seasons vary in different parts of Europe it is possible for the Interfrigo pool of wagons to meet the requirements of refrigerated traffic throughout the whole year without risk of any long periods of idleness. If any country wishes, and its Customs authorities allow it, these wagons can be used for internal traffic, provided that they are not required for international traffic. In this way, it will be seen that the cost of refrigerated transport, admittedly a heavy item, has been reduced to a minimum by the efforts of railway administrations in creating an international pool of wagons.

Axle-changing installation at the Franco-Spanish frontier at Cerbère

The Interfrigo Company's other source of income is from the railway administrations themselves. The railway freight rates include a proportion for the provision of the wagons and as, with Interfrigo wagons, the railway is not providing the wagon, it is only just that the proportion of the rate representing this should be paid to Interfrigo. This payment is in the form of a kilometric rental payable per km. of loaded running.

Competition

Air competition is most active at the beginning and end of seasons when fruit commands high prices and warrants the extra cost of conveyance by air. Generally, however, unless the goods can command extremely high market prices it is not considered economical to send them by air when adequate rail

services are offering. Road transport competition from and to Great Britain is more or less negligible for obvious reasons, but between countries on the Continent it has given rise to concern. The introduction of large-capacity insulated lorries, often fitted with mechanical refrigeration, has enabled a door-to-door service to be offered. The railways have been obliged to improve their facilities and it is for this reason mainly that they decided to form the Interfrigo Company.

The transport of perishable goods by direct steamer is the other principal competitor and this is extremely active where relatively short sea crossings are involved, as from Belgium and Holland to this country. When long sea journeys are necessary, as from Spain, the speed and technical advantages of rail transport enable the railways to retain a good proportion of the traffic *via* the overland route. Another advantage of rail over direct sea competition is that it enables a steady and regulated flow of goods to the markets to be made, whereas direct sea transport tends to flood the market and have an adverse effect on prices.

The wagons with interchangeable axles already referred to were put into service at the beginning of 1951. Special installations for changing the axles were provided at Hendaye, the French frontier station on the Paris-Madrid route. Similar installations were built subsequently at Cerbère, on the Mediterranean coast line between France and Spain. It is not claimed that the method used by Transfesa is new; it is simply an improvement on the methods used in other similar installations which formerly existed in Europe, such as that tried with limited success only about 1920, when a private company registered with the French railway constructed some 30 wagons fitted with a type of interchangeable axle.

For exchange of rolling stock with the U.S.S.R. there existed before the second world war four depots using methods rather similar to those of Transfesa for the exchange of axles between the international and Russian gauges—in Lithuania at Riga and Daugavpils, and in Poland at Zdolbunow and Niegereloje.

The depot at Hendaye was designed in the light of past experience and to allow for the interchange of axles of a complete train of wagons in as short a time as possible. It consists of a shallow pit which can accommodate three sets of wagon hoists, each consisting of four jacks to handle one wagon at a time. The depot is roofed over and the roof is equipped with overhead travelling gantries with which to handle the axles and wheels. Each installation can change the axles of eight wagons an hour.

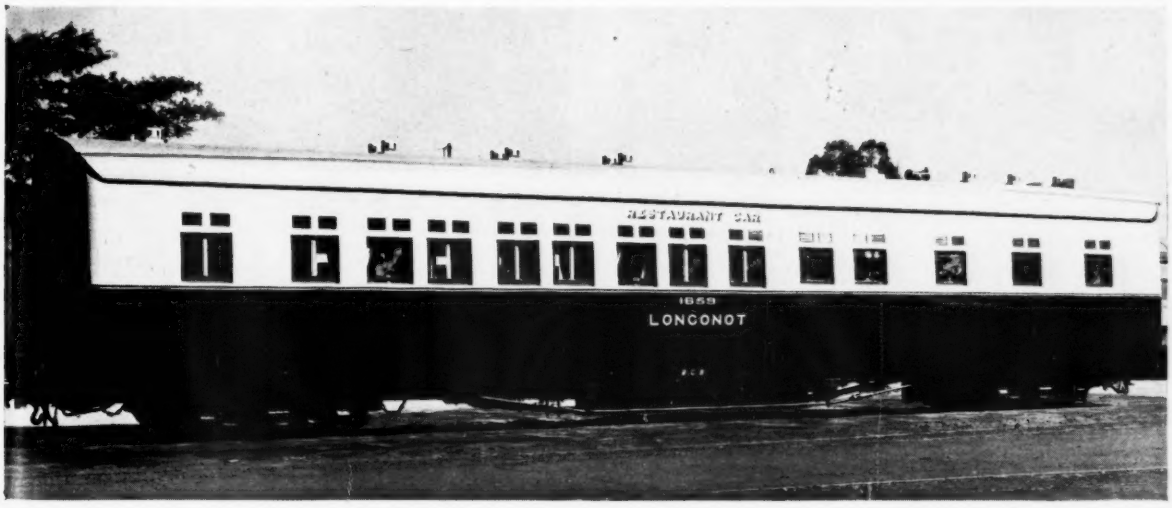
Transfesa Wagons

At present Transfesa has 105 English and 30 Continental loading gauge non-refrigerator wagons and 162 British gauge refrigerator wagons in service. These are designed in conformity with the international regulations in force in Europe applicable to wagons used for international traffic. They have a capacity varying from 15 to 18 tons and are fitted with a double floor which makes them specially suitable for the transport of citrus fruit in bulk. They are fitted with two types of brakes, the vacuum brake for use in Spain and in Great Britain and the Westinghouse in other European countries.

Traffic from Spain to other European countries, which consists mostly of citrus fruit and fresh vegetables, is exceptionally suitable for this type of wagon and makes up the most important part of the traffic. For about six months of the year the main traffic is the export of oranges, which up to the present has been carried mainly by direct steamship. British and Continental railways are making an earnest endeavour, in co-operation with Transfesa, to bring this traffic to rail. Transfesa refrigerator wagons are all fitted with ice bunkers and with a layer of insulation, which makes them similar to the Interfrigo wagons in use on standard-gauge tracks. The Transfesa and Interfrigo companies co-operate closely in the transport of refrigerated traffic, and the icing, re-icing, and supervision of the Transfesa wagons in transit are undertaken by Interfrigo once they have passed the Franco-Spanish frontier.

During the war, many refrigerator wagons were destroyed by enemy action. In France alone, 278 were destroyed and 250 seriously damaged, and 260 disappeared. In addition, the cold store at Avignon was badly damaged by bombing. After the war there was chaotic period characterised by restrictions on movement and laborious searches for damaged wagons which had been shunted into yards. Post war difficulties have been largely overcome and it is to be hoped that the coming years will see great improvements, both commercially and technically.

East African-Built Restaurant Car



A new restaurant car on the Kenya-Uganda section of the East African Railways built at Nairobi Workshops from two coaches wrecked in a major accident

Lightweight Hydraulic Jacks

New design for heavy-duty lifting

A SERIES of lightweight hydraulic jacks known as Hydralite has been designed by Tangyes Limited, Birmingham. The design has been evolved to meet the need for a lifting jack light in weight, easy to operate, and requiring minimum maintenance. Reduction in weight has been achieved by the extensive use of high-strength aluminium alloy.

Synthetic rubber seals are used, with total enclosure of the working parts, and as oil is used as the hydraulic medium, no deterioration takes place when the jack is not in use. The design of the jack gives the minimum closed height in relation to the run out, at the same time maintaining a long guide for the ram.

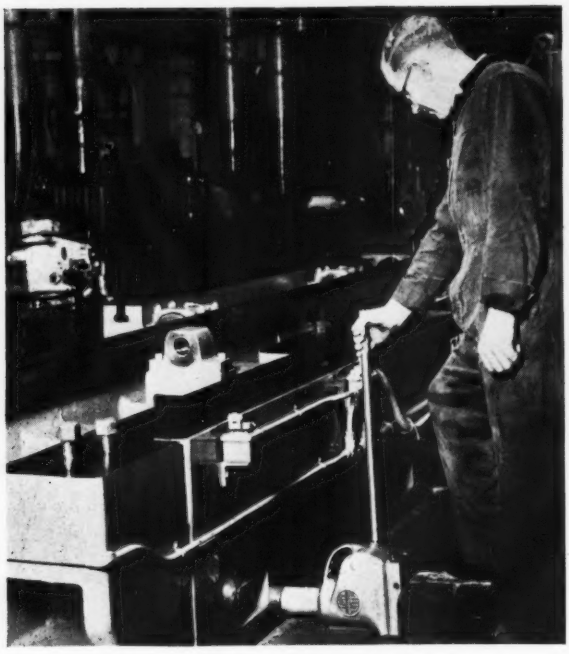
A strong rigid base in the form of a one-piece aluminum alloy billet provides adequate protection from loads induced by uneven jacking surfaces. Contained in the base are all the valves and fluid lines which are adequately protected from dirt by a built-in large capacity suction filter. The ram and cylinder are of aluminium alloy extrusions, accurately finished to provide a close sliding fit. The cylinder is bonded into the base and positively sealed; the ram is marked to indicate the safe limit of lift.

Sealed Fluid

The hydraulic fluid is completely sealed in the reservoir formed by the aluminium alloy casing, a feature which permits the jack to be used in either the vertical or horizontal positions. The pump valve, and also the relief valve are designed to eliminate slip and so provide accurate control; all valves are easily removed for inspection. The pump is of hardened ground steel, actuated by a lightweight operating lever. Three working positions are provided, two for vertical, and one for horizontal operations.

The operating lever has been kept to a length of 30 in. to facilitate operation in confined spaces, the approximate effort required to lift a full load is 110 lb. A key provided at the end of the lever serves as a spanner for dismantling the jack; no other tools are required.

Hydralite jacks are manufactured in five different sizes, capacity and weight, from a power lift of 6 in. to 12 in., weighing from 24 to 59 lb., and capable of lifting from 15 to 50 tons; while the closed height varies from 10⅛ to 17½ in. Additional attachments which include a screwed ram and retaining unit can be provided, and the 12 in. model can be fitted with a loose claw for dealing with low set loads. All jacks are subject to a 50 per cent overload pressure test.



In use in the horizontal position

Lifting a machine bed with the claw attachment

WATER DISCHARGE TABLES.—Formulæ for calculating the flow of water in gallons per minute from steel pipes at various inclinations have been used as the basis of tables issued by Stewarts and Lloyds Limited from which these quantities can be found in a matter of seconds. The tables, covering bitumen-lined and galvanised pipes, were devised by Dr. J. S. Blair of the company's Research Department at Corby, and were published by him in a paper presented to the Institution of Mechanical Engineers on February 9, 1951. They are issued in the form of a durable pocket-size card measuring 4¼ in. by 2⅞ in.

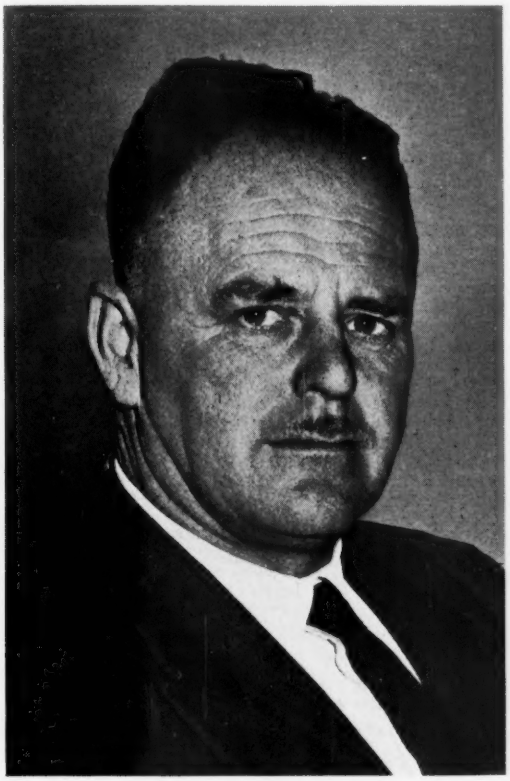
B.S. FOR LEAD AND LEAD ALLOY CABLE SHEATHS.—The British Standards Institution has just published a revised edition of B.S.801, "Lead and Lead Alloy Sheaths of Electric Cable," which was originally issued in 1938. The earlier edition included pure lead and four lead alloys, to which a fifth was added by the issue of an amendment slip in 1942. Subsequent experience has shown that a smaller range of alloys is adequate to meet users' requirements, and the present revision, therefore, refers to lead and three lead alloys only. The fatigue data which were given in the 1938 edition of this standard have been replaced by an appendix giving guidance on the types of cables and conditions of service for which particular alloys are suitable. Copies of this standard may be obtained from the British Standards Institution, Sales Branch, 24, Victoria Street, London, S.W.1. The price is 2s.

RAILWAY NEWS SECTION

PERSONAL

Tothill Press Limited Appointments

Mr. B. W. C. Cooke, Mr. J. S. Hunter and Mr. S. Newman have been appointed Executive Directors of Tothill Press Limited, the company owning and publishing this journal.



Mr. G. F. Brown

Acting Chief Mechanical Engineer, Victorian Railways

Lt.-Colonel G. R. S. Wilson, C.B.E.

Chief Inspecting Officer of Railways, Ministry of Transport

Mr. G. F. Brown, who has recently been appointed Acting Chief Mechanical Engineer of the Victorian Railways in the absence of Mr. A. C. Ahlston, who is abroad on several months' leave, joined the Department as an Apprentice Fitter & Turner in 1923. After completing his apprenticeship, Mr. Brown rose through the various engineering grades to Plant Engineer in 1939. He was promoted to Foreman in 1940, and three years later became Superintendent of Locomotive Maintenance. Mr. Brown was responsible for the successful conversion to oil firing of various types of furnaces at Newport Workshops, and during the last war organised the shell production annexe at the workshops which had an extremely high output of 3.7 and 25 lb. shells for the Australian Army. Another highlight of Mr. Brown's eventful railway career was the successful conversion of a considerable number of V.R. coal fired locomotives to oil burners. These included the S. class engines that haul Australia's express passenger train "Spirit of Progress." In 1951 Mr. Brown visited America to study the operation, servicing and maintenance of diesel-electric locomotives and to investigate matters associated with the use of steam locomotives, including depot organisation and maintenance methods. Subsequently, on behalf of the Commissioners, he took progressive delivery of the Australian built diesel-electrics and supervised their early running and servicing. He successfully established a modern diesel servicing and maintenance shop and a school for the instruction of drivers and diesel maintainers.

Lt.-Colonel G. R. S. Wilson, R.E. (retired), Chief Inspecting Officer of Railways, Ministry of Transport, who, as recorded in our June 5 issue, has been created a C.B.E. in the Coronation honours, was educated at Marlborough and at the R.M.A., Woolwich. He was commissioned in the Royal Engineers in November, 1914, and went to France in May, 1915, serving in field companies there and in Macedonia throughout the war. He subsequently commanded a field company in Ireland, and in 1921 was employed by the Colonial Office for the survey work of the Syria-Palestine Boundary Commission. Thereafter he served with railway troops at Longmoor until 1924, during which time he was also in charge of the Catterick Military Railway and was attached to the South Eastern & Chatham Railway for a year's training course. From 1924-30 he was employed in the Directorate of Movements at the War Office, after which he saw two years' service in Malta. He returned to the Railway Training Centre at Longmoor, where he became an Instructor, after undergoing a training course with the Southern Railway. In 1935, having retired from the Royal Engineers, he was appointed an Assistant Inspecting Officer of Railways in the Ministry of Transport. Colonel Wilson was recalled to the army on the outbreak of war in 1939, and served as Assistant Director of Railways with the B.E.F. in France until June, 1940, when he resumed his duties with the Railway Inspectorate. He was appointed an Inspecting Officer of Railways in 1941, and Chief Inspecting Officer in 1949.

Mr. M. W. Maxwell, Special Assistant in the Research & Development Department, Canadian National Railways, and Mr. J. E. Armstrong, former Chief Engineer, Canadian Pacific Railway, have been awarded the Julian C. Smith Medal by the Engineering Institute of Canada for services in the development of Canada.

Mr. A. Jessop, Transport Adviser to the Government of Mauritius, ceased to be a Director of Hebble Motor Services Limited on July 20, 1952, and of the Yorkshire Traction Co. Ltd. on July 26, 1952.

XUM

Mr. Paul Kradolfer

General Manager (Working & Construction, Electrification), Swiss Federal Railways

Mr. M. Ridgway

Chief Commercial Manager, Victorian Railways, who has retired

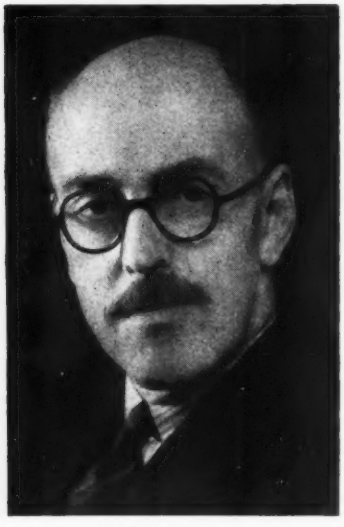
Mr. R. C. Burgess

Appointed Chief Commercial Manager, Victorian Railways

Mr. Paul Kradolfer, General Manager (Working & Construction, Electrification), Swiss Federal Railways, who will shortly retire for reasons of ill-health, was born on April 13, 1891, at Frauenfeld, Thurgovia. He studied engineering at the Federal Technical High School, Zürich, and took a diploma in 1914 as a civil engineer. From 1914 to 1918 and from 1920 to 1928 he practised that profession in Umbria, Italy. He was associated in the construction of the Spoleto-Norcia electric railway and bridge-design work, and with plans for the Rimini-San Marino electric narrow-gauge line. He also carried out private work on street and road construction, and engineering and building projects in Umbria. From 1918 to 1920 he acted as Secretarial Assistant to the Chief Engineer & Purchasing Engineer of the Berne power station undertaking for the building of the Mühleberg generating station. Mr. Kradolfer had his own offices in Frauenfeld from 1928 to 1932. He was later appointed Supervisory Engineer (First Class) in the Railway Section of the Federal Post & Railway Department, and, in 1935, Deputy Director, Federal Transport Department. In 1936 he became Director. He was appointed General Director (Commercial & Legal Department), Federal Railways, in 1940. Mr. Kradolfer later became head of the Construction & Operations Section, his present position.

Mr. M. Ridgway, Chief Commercial Manager, Victorian Railways, who has retired, joined the Department in 1906 with the Supervisor of Weighing. He went to the Goods Division in 1912 and became Principal Rates Officer in 1933. He had much experience in the work of the branch, including handling the freight contract system and many important rating matters which arose in the 1939-45 war, before he was appointed General Passenger & Freight Agent when Mr. J. McClelland retired in 1947. Subsequently the branch became the Commercial Branch, and Mr. Ridgway the first Chief Commercial Manager.

Mr. R. C. Burgess, who succeeds Mr. M. Ridgway as Chief Commercial Manager of the Victorian Railways, joined as a porter at Jolimont in 1913 and in the same year went to Melbourne Goods as a messenger. Later, he was acting clerk, waybilling typist and calculator. He held 15 different positions in Melbourne Goods before he was transferred to the Revision Bureau, Accountancy Branch, in 1927. Five years later he was appointed to the General Passenger & Freight Agent's staff as a commercial agent. During the 1939-45 war



Mr. F. Batty

Appointed District Operating Superintendent, Burntisland, Scottish Region

Mr. H. Capstick

Assistant Divisional Operating Superintendent, Derby, 1942–53

Mr. M. A Sinesia

Appointed Chief of Supply Department, General Urquiza Railway, Argentina

Mr. Burgess was Liaison Officer to the Reserve Stocks Committee before he was lent to the American Army in 1942 as Headquarters Movements Officer of Commonwealth rail transport. When U.S. headquarters moved from Melbourne to Brisbane, Mr. Burgess was appointed Supervisor of the Rail Accounts Section, Department of the Army. Subsequently he was lent to the Disposals Commission as Consultant on the economic movement of war materials for disposal. Mr. Burgess returned to the Department in 1946.

Mr. Frank Batty, Freight Trains Assistant to the Operating Superintendent, Scottish Region, Glasgow, has been appointed District Operating Superintendent, Burntisland, Scottish Region, British Railways. Mr. Batty joined the service of the North Eastern Railway at Middlesbrough in January, 1915, and occupied various posts in the Darlington and Middlesbrough Operating Districts until appointed District Inspector at Burntisland in January, 1935. Appointed Deputy Chief Controller in the Darlington District Operating Superintendent's Office in March, 1937, he became Chief Trains Clerk & Controller in May, 1938. In August, 1940, he was one of the first Deputy Chief Controllers to be appointed for the Central Control in the Superintendent's Office at York and was promoted senior Freight Trains Clerk in the same Department in July, 1941. In January, 1943, Mr. Batty was appointed Assistant to the District Operating Superintendent at York and promoted to Head of Freight Trains Section, York Headquarters, in February, 1946. On November 27, 1950, he was appointed Freight Trains Assistant to the Operating Superintendent, Scottish Region, Glasgow, and took up his new duties at Burntisland on May 11, 1953.

Mr. H. Capstick, Assistant Divisional Operating Superintendent, Derby, London Midland Region, British Railways, who, as recorded in our March 22 issue, has retired, joined the Midland Railway in 1903, and after experience in the control organisation was, in 1931, in charge of a committee of research on shunting and traffic problems. He was District Controller at Kentish Town from 1934 to 1936, and after a further period of operating investigations became Divisional Freight Controller, until he was appointed Operating Superintendent, Derby, in 1942. Mr. Capstick was also a member of the committee largely responsible for the traffic movements in connection with the conversion of Toton up hump marshalling yard to an enlarged and remodelled design with rail brakes and special modern equipment completed by the British Railways in December, 1950.

Mr. Mario A. Sinesia, who, as recorded in our March 20 issue, has been named Chief of the Supply Department of the General Urquiza Railway, Argentina, was born in Buenos Aires in 1918, and received his degree of Civil Engineer in the University of Buenos Aires in 1944. Shortly afterwards, he joined the then National Transport Board where he occupied the post of sectional Chief. He was later named Technical Secretary of the committee appointed to draw up the administrative organisation of the future Ministry of Transport. At the same time, he occupied an auxiliary professorship in the Faculty of Exact & Physical Sciences in the University of Buenos Aires. In 1949 he resigned his official posts in order to dedicate himself to private construction work, but in 1952 he joined the General Urquiza Railway as Chief of Division, being named Chief of the Supply Department only six weeks afterwards. Mr. Sinesia has occupied a number of different professorships in the University of Buenos Aires since graduating, and is the author of several treatises connected with his profession. At present he is studying law in the same University.

Mr. E. H. Brownbill, Assistant Chief Mechanical Engineer, Victorian Railways, who, as reported in our May 1 issue, has been appointed Deputy Commissioner of the Victorian Railways, has had a wide experience in the planning and management of workshops and also in locomotive operation. His investigations into locomotive design some years ago led to substantial improvements in engine performance and train running generally. He joined the Department in 1925 as an engineering assistant after a brilliant career at Melbourne University, where he gained the degree of Master of Mechanical Engineering for a 10,000-word thesis on improvements to locomotives of the Victorian Railways. He is also a Bachelor of Electrical Engineering. Mr. Brownbill, at 35, was appointed Manager of the Newport Workshops, and took over at one of the most important periods in the history of the workshops, that in which Australia's first air-conditioned train, "Spirit of Progress," was built. In 1937, at the request of the Tasmanian Government, Mr. Brownbill, with another officer of the Victorian Railways, reorganised many branches of the Tasmanian Railways. Mr. Brownbill was appointed Assistant Chief Mechanical Engineer in 1943. After the Government had, in May, 1949, approved the electrification of the Gippsland line between Dandenong and Traralgon, Mr. Brownbill was sent with three other senior officers to South Africa to investigate main-line electrification.

Colonel Sir Gordon Hearn, C.I.E., D.S.O., who, as recorded in our June 12 issue, died on June 7 at the age of 81, was educated at Winchester and the R.M.A., Woolwich, and was commissioned in the Royal Engineers in 1890. He was engaged in civilian work on the North Western Railway of India in 1894-97. After active service on the North West frontier he returned to railway surveys in Rajputana, Coorg, and elsewhere, and was Deputy Consulting Engineer for Railways, Madras, in 1901-02. The period that followed was one of increasingly rapid railway development, during which he took part in the construction of the Agra-Delhi Chord Railway. He then went to Burma as Deputy Consulting Engineer for Railways and Engineer-in-Chief of the Burma railway surveys. After working on the Bombay-Sind connecting railway survey in 1907-08 he was Government Inspector of Railways, Dharwar in 1908-10, and in the following years was Engineer-in-Chief of the Khandwa-Akola-Hingoli and the Zhob Valley railway surveys. He served in France in the war of 1914-18, during which he was awarded *inter alia* the D.S.O. He went again to India in 1919 and served with the North-West Frontier Force. Later, his duties included location and construction of the Khyber railway, of which he was Chief Engineer in 1919-20. He was then made Chief Engineer of the Indian State Railways and General Manager of the Eastern Bengal Railway until his retirement in 1926, in which year also he was awarded the Crampton Prize of the Institution of Civil Engineers. In 1924 he was made C.I.E. He published several books on railway engineering and surveying, and after his retirement he undertook among other activities editorship in 1938 of the fifteenth edition of Murray's *Handbook for Travellers in India, Burma and Ceylon.*

Mr. F. Jackson, Resident Engineer, Reef Construction, South African Railways, Johannesburg, has been appointed System Manager, S.A.R., Kimberley.

We regret to record the death in Alta Gracia, Argentina, of Mr. David Blaiklock Bulman, who retired from the position of Chief of Expenditure Audit in the Chief Accountant's Department of the Central Argentine Railway in 1948. He then joined the Liquidating Commission of the British-owned railways under Mr. R. Montgomery. From 1946 to 1948 he was Chairman of the British Staff Committee.

We regret to record the death in Wolverhampton of Mr. Richard Victor Cable, former Chief Accountant of the Buenos Aires & Pacific, Buenos Aires Great Southern and Buenos Aires Western Railways. Mr. Cable succeeded his father as Chief Accountant of the Central Uruguay Railway and was named Chief Accountant of the Buenos Aires & Pacific Railway in 1937, later becoming simultaneously Chief Accountant of the Buenos Aires Great Southern and Buenos Aires Western Railways.

Mr. A. D. R. Watson, B.Sc. (Eng.), A.M.I.C.E., A.C.G.I., Assistant to the District Engineer, Stratford, has been appointed Assistant District Engineer at Peterborough.

Mr. C. J. Chaplin, M.B.E., Assistant Engineer (Works Maintenance) London Midland Region, British Railways, is retiring on grounds of ill-health.

Mr. D. C. Stuart, Assistant District Motive Power Superintendent, Doncaster, retires on June 30.

The appointment is announced by British Railways, Western Region, of Mr. A. W. McMurdo, M.B.E., B.Sc., A.M.I.C.E., Assistant District Engineer, Plymouth, as Assistant District Engineer, London District (Western Region).

We regret to record the death on June 3 of Mr. Charles R. Clutsom, Northern Ireland Regional Sales Manager for Leyland Motors Limited.

Iron & Steel Holding & Realisation Agency

Sir John Morison, a Partner in Thomson McLintock & Company, chartered accountants, and a Director of Guest Keen & Nettlefolds Limited and of the Finance Corporation for Industry Limited, has been appointed Chairman of the Iron & Steel Holding & Realisation Agency set up under the Iron & Steel Act, 1953.

Other Members of the Agency will be: Sir John Green, Chairman of the Iron & Steel Corporation and formerly a Director of Thos. Firth & John Brown Limited; Mr. A. C. Bull, a retired senior official of the Bank of England; Sir Thomas Chadwick, Accountant of the Treasury until May 31 last; Sir Oliver Franks, lately British Ambassador in Washington and now Deputy Chairman of Lloyds Bank Limited; and Mr. C. P. L. Whishaw, a Member of the firm of Freshfields, Solicitors.

XUM

Ministry of Transport Accident Report

Blea Moor, April 18, 1952: British Railways, London Midland Region

Colonel D. McMullen, Inspecting Officer of Railways, Ministry of Transport, inquired into the accident which occurred at about 1.23 p.m. on April 18, 1952, when the 9.15 a.m. "Thames-Clyde" express, Glasgow to St. Pancras, consisting of ten coaches drawn by a "4P" class 4-4-0 engine (leading) and a "7P," 4-6-0 (train) running at about 55 m.p.h. became derailed at the facing points of the up loop connection at the Blea Moor signalbox, a detached brake rod on the tender of the leading engine having caught in the points equipment and forced open the closed switch rail. Damage was considerable but fortunately there were no fatalities among nearly 200 passengers, although 29 were injured and also five railway servants; 17 passengers had to be detained in hospital. There is no road near the site and the injured were taken forward by special train to Ribblehead Station. The arrangements made by the railway and the response from the public for assistance deserve the highest praise. All lines were blocked but clearing them was started without delay. Single-line working on the down line was introduced at 9.12 a.m. the following morning and normal working over both lines by 4.40 p.m., after the considerable damage to the permanent way had been repaired. The weather was fine.

The train had been running on a down grade of 1 in 100 from about the southern end of Blea Moor Tunnel, about ¾ mile away. The track showed fresh irregular markings on some sleepers, towards the right-hand rail, from about ¼ mile north of the tunnel and it was found that the forward end of the right side adjustable brake rod on the tender of the leading engine had come adrift, being itself badly bent with rounded loose end bruised. No other defects were found in the train other than those caused by the derailment. This rod struck the facing point lock stretcher bar, buckled and shortened it 1⅞ in. The lock and the detector were fractured and the left-hand closed switch pulled away ⅝ in., inevitably derailing the train engine and coaches following it over the points.

The Brake Gear

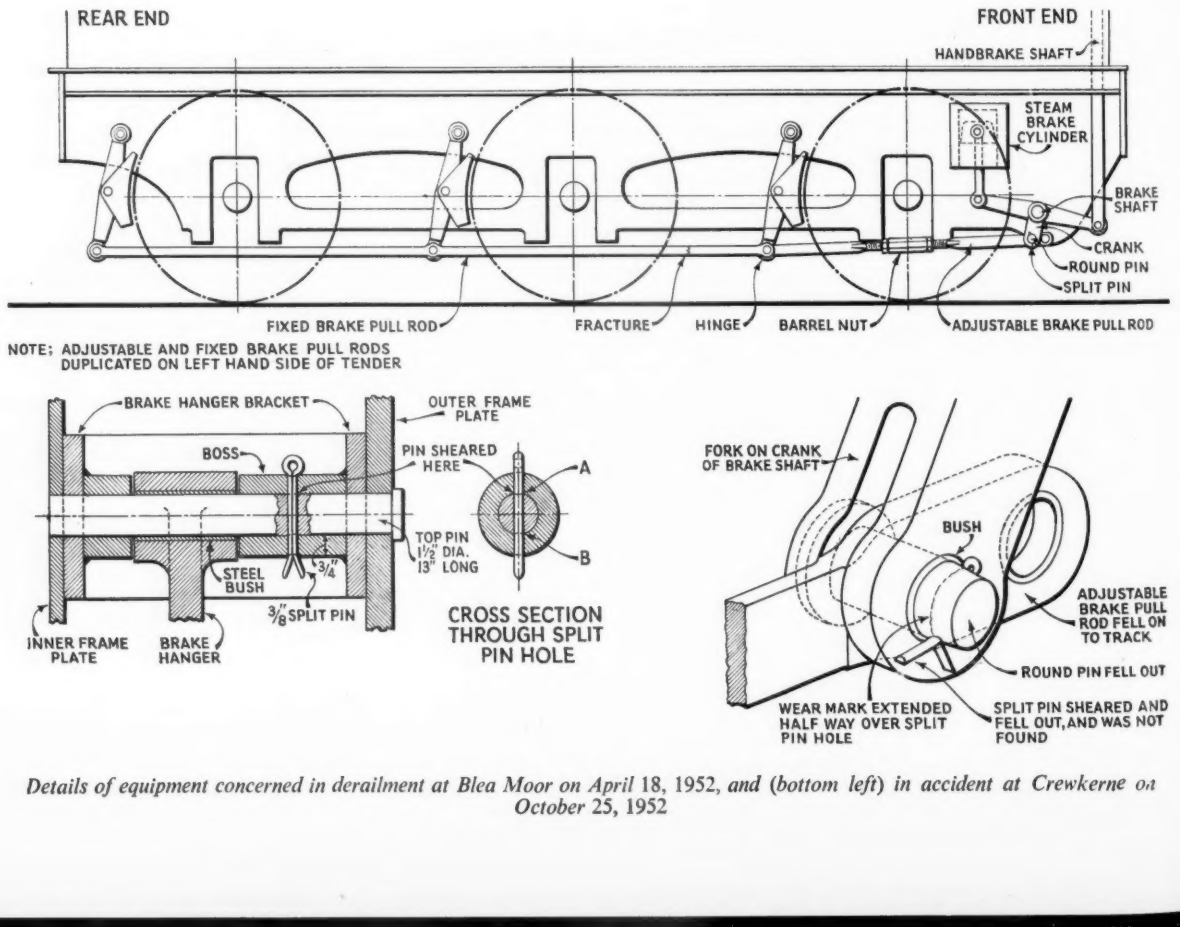
The general arrangement of this equipment is shown on the accompanying drawings. The round pin of the right-hand rod and its split pin were missing, but a similar pin was found in the vicinity of the first sleeper mark and was assumed to be the missing one. It was undamaged but had slight wear marks made by the bushes in the fork of the brake shaft crank extending half way across the split pin hole. The pin of the left-hand rod, removed for examination, was found to be not of standard size and wear again extended well over the 7/16 in. dia. split pin hole. The split pin was only 5/16 in. dia., kinked and partially sheared at the head and in the legs. The right-hand rod was flawed at the point of fracture, but this could not have been noticed in normal inspection. Fracture resulted from the rod striking the track but did not contribute to the accident.

Course of Events and Evidence

The Blea Moor signals were at clear for the train. Neither a locomotive firing instructor nor anyone on the engines or train noticed anything amiss. A permanent way gang in the tunnel noticed that something was striking the ballast but could do nothing.

The pilot engine belonged to Holbeck Shed, North Eastern Region. On April 18 it worked *via* Bradford to Carlisle, where it was attached to the express. A fitter at Kingmoor Shed adjusted the brakes on engine and tender over a pit, with a good lamp. He said he did not look at the split pins on the cranks of the brake shaft, but thought he would have noticed if one were missing. The engine had run 41,000 miles since leaving shops in November, 1950, and had undergone "X" examination at Holbeck the day before the accident, as carried out every 12 to 16 days with such engines. An examining fitter first inspects carefully and prepares an "examination and repair card" ("X" card) containing heading of items to be done and adds others as he considers his inspection to make necessary. These are allocated to fitters by their foreman. Each engine is thoroughly inspected by an examining fitter before leaving the shed.

The following item is included in an



Details of equipment concerned in derailment at Blea Moor on April 18, 1952, and (bottom left) in accident at Crewkerne on October 25, 1952

"X" examination by the Railway Executive instruction "Examination of Steam Locomotives."

Item No.	Parts to be examined	Procedure	Locomotives
20X	Brake gear	Examine and adjust or reblock as required Lubricate brake cylinder trunnions, brake shaft and hand brake screw	All

The equivalent heading on the "X" card (item 19X) is "Brake Gear."

The fitter who prepared the "X" card said that he examined the engine on a pit with a flash lamp and found nothing wrong with the brake gear, including split pins, which he tapped. He wrote against item 19X "clean, oil and leave free," which was, he said, generally done on every such card. Against 26X, the standard heading for which did not apply, he wrote "engine and tender brake blocks to change."

The fitter to whom item 19X was allocated explained how he oiled and greased certain parts, but when asked whether he examined the brake gear generally and, in particular, any split pins, replied that he was not an examiner and it was not his job. He would report anything which he saw wrong.

Another fitter attended to item 26X and said that he reblocked the tender by slacking the pull rod barrel nuts. It was not necessary to touch the round pins and no part of his duty to examine brake gear generally. He had a good look round, however, and saw nothing wrong.

Work was finished about 5 a.m. on the day before the accident and the final examination made at 3 a.m. the following day, over a pit, by an examining fitter using an electric lamp. He knew the engine to have been under repair but did not have the repair card and was unaware of any special items booked. He noticed the new brake blocks and said that he found all split pins intact.

The leading fitter's opinion was that responsibility for examining brake gear in accordance with item 20X of the Executive's instruction devolved on the examining fitter who inspected the engine before and after the "X" repair, although the fitters allocated to oiling and greasing also should ensure that it was in order. The fitter examining an outgoing engine knew whether it had been under an "X" or other examination but not what special items of work had been carried out. He had access to the "X" card, which would tell him that. He himself signed that card but did not examine the engine. Between 90 and 100 engines were homed at his shed and approximately seven were under "X" examination each day. He thoroughly checked the work on at least one daily, but had no system for ensuring he inspected every engine within a reasonable period. The split pin from the left-hand rod was not a good one; it should have been changed. It was hardly ever necessary to move the position of the round pin. He did not think the examining fitter was in the habit of neglecting that part of the gear and had himself never found a defective pin, or a split pin missing.

The foreman considered it was the responsibility of the fitter changing the brake blocks to notice and change defective split pins. The examining fitter also should look at the pins automatically. Very rarely had the position of the round pins to be adjusted. He had known split pins to shear, but the wear should be noticed and a pin changed before that could happen. The pin from the other pull rod was "definitely not good." He spoke well of both the examining and other fitters concerned, all of whom were experienced.

The Shed Master said that when this engine was in on April 17 the examination and work scheduled for every seven to nine weeks was done, in addition to items under the "X" examination. The latter were allocated to fitters and not entered on the card. The only one concerning the brake gear was the adjustment of the hand brake and that was done. The leading fitters did not have time to check all work done on engines after an "X" or a "7 to 9 weeks" examination, but were expected to make spot checks. They were required to make careful inspection before and after an engine underwent the more detailed examination given every 10,000 to 12,000 miles, but even then they would be expected to look mainly for signs of wear. These inspections moreover did not take the place of those done by examining fitters. This particular engine last had the 10,000 to 12,000 miles scheduled attention on February 6, 1952, and had since run 5,000 miles. It was the responsibility of examining fitters to check the brake gear before and after "X" examinations and also during the daily examination of all engines, given before working a passenger train. He would have expected the fitter changing the brake blocks in this particular case to have noticed the left-hand rod split pin; he agreed it was defective.

Inspecting Officer's Conclusion

There is no doubt that the brake rod came adrift because of bad maintenance and, bouncing over sleepers and ballast for over two miles, struck the f.p. stretcher bar and wrenched the closed switch open. The round pin holding it to the brake shaft became displaced from the securing split pin dropping out, perhaps many miles back; one cannot say in what way it was defective but a well-fitted split pin correctly splayed will not fall out. Wear marks on the round pin indicated that the split pin could not have been a good fit and that its condition was like that of its equivalent on the other brake rod, far from good. Probably one leg sheared and the pin fell out because the other was straight or inadequately splayed, or both may have sheared. The pins were easily accessible and their condition certainly should have been noticed before and after "X" examination. Colonel McMullen cannot accept the contention of the examining fitters that they were in order. The two fitters who worked on the brake gear, particularly the man changing brake blocks, might also have noticed the defect, but it is not fair to blame any of these four directly for the accident, as the pins must have been defective for some time.

Colonel McMullen examined other engines at Holbeck but found no split pins in a condition comparable with that taken from this engine. He saw, however, a few pins not fitting well and some with only one leg splayed. That should not have existed. He considers that over a considerable period insufficient attention had been paid to examining engine brake gear.

This serious accident, almost identical with one at Wood Green in 1944, was the third on British Railways within a year attributable to a locomotive defect. The others were the Weedon derailment of September 21, 1951, and the collision at Queen Street, Glasgow, on November 14, 1951. In all three, engines were in traffic in an unsafe condition, in this case for a considerable period. If the safety of the travelling public is to be ensured locomotives must be efficiently maintained, examination and repair being conscientiously supervised. Engines now are used much more intensively; close supervision is specially important. The necessity for careful attention to detail needs no emphasis.

It was fortunate there was no loss of life. The complete absence of telescoping in the leading coaches can be attributed only to the Buckeye couplings, now standard in the B.R. design of main line coach, another feature of which is the greatly strengthened welded underframe which here withstood the considerable shock particularly well.

The Crewkerne Accident

In an appendix Colonel McMullen gives particulars of an accident which occurred on October 25, 1952, on the Southern Region, near Crewkerne, when the 12.20 p.m. express, Ilfracombe to Waterloo, consisting of eleven coaches drawn by a "Merchant Navy" class engine was running at about 75 m.p.h. The brake hanger on the left-hand trailing tender wheel became detached, caught a check rail at an occupation crossing, and tore it up. The rail, weighing 2¼ cwt., passed through the floor of the leading coach and then some compartments. A child was seriously injured and seven other passengers were slightly injured, or had to complain of shock. The accompanying sketch shows the arrangement for supporting the brake hanger. Only the upper portion of the split pin was in position and the top pin was missing. The latter was found 1½ miles beyond the first marks on the track, nearly three miles from the crossing.

The top pin was case-hardened steel and had a clearance of $\frac{1}{64}$ in. in the brake hanger bracket and boss. The split pin was an easy fit. There was no means of lubricating the top pin, and friction with the hanger caused it to rotate slightly with each brake application, subjecting the split pin to shear. This tendency was found in other engines and was an unsatisfactory feature of the design. It was first noticed in December, 1951, after this class of engine had been over ten years in service, when a similar accident occurred near Woking, fortunately without damage. Modification of the supporting arrangements was proposed and was still under consideration when the Crewkerne accident took place, but immediately thereafter steps were taken to remedy the defect. Work on all engines in traffic was completed by November 5, 1952. Action is in hand to ascertain whether the same feature exists on other classes of engine and, if necessary, to modify it. The engine had undergone an "X" examination five days before and the fitters—and others later—said all split pins were intact. No defect in one could have been noticed before its first leg fractured; this may not have happened before leaving the shed, but the possibility cannot be ignored. If that was the case the leg would at least have been loose. This might not have been noticed under the dirt, accumulated more rapidly on this class of engine than on others, owing to leakage of oil from the sump of the chain-operated valve gear. Instructions have been issued covering this point.

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"Princess Victoria" Inquiry Findings

Report on foundering of ship on the Stranraer-Larne crossing on January 31

The report of the court appointed by the Ministry of Transport to investigate the loss of the British Transport Commission's ship *Princess Victoria* in the Irish Sea on January 31, when bound from Stranraer to Larne, with the loss of 133 lives, states that the casualty was due to her unseaworthy condition arising from two circumstances:—

The inadequacy of the stern doors, which yielded to the stress of the seas, thus permitting the influx of water into the car space; and

The inadequacy of clearing arrangements for the water which accumulated on the freeboard deck causing an increasing list to the starboard, culminating in the ship capsizing and foundering.

The findings were delivered by the Chairman of the Court, Mr. J. H. Campbell, Q.C., in Belfast, on June 11. The report is in the form of answers to 48 questions submitted by the Ministry together with an annex.

The answers to the final questions were as follows:—

What was the cause of the loss?—The loss was caused by the failure of the stern doors permitting the influx of water to the car space from which there was no adequate provision for clearance. The accumulation of water in the car space, and the extension of the flooding beyond it, destroyed the stability of the ship, which ultimately capsized and foundered.

Were the freeing arrangements adequate?—No.

Were the stern doors of adequate strength for the Larne-Stranraer passage?—No.

Was the loss caused or contributed to by the wrongful act or default of the owners, managers, Master or any other person?—The loss was caused by the owners and managers in the following respects:—

(*a*) In that they failed to provide stern doors sufficiently strong to withstand the onslaught of the heavy seas which may reasonably be expected to occur from time to time in the North Channel;

(*b*) In that they failed to provide adequate freeing arrangements for seas which might enter the car space from any source;

(*c*) In failing to take precautionary steps after the incident of November, 1951 (when the stern doors were stove in as the ship was going astern into heavy seas);

(*d*) In failing to comply with the provisions of Section 425 of the Merchant Shipping Act, 1894, in so far as they did not report the incident mentioned.

Was the loss of life consequent on the sinking caused or contributed to by any wrongful act or default of the owners, managers, Master or any other person?—By the default of the owners and managers as set out.

Cargo Well Stowed

In reply to other questions the Court found that the cargo was well stowed and secured and that the stern doors were properly closed and secured when the ship sailed. The vertically sliding stern door was not closed. All other doors leading from the car deck were also properly closed and the ship's side doors in the main deck lounge. The ship was not seaworthy on sailing but in other respects was fully equipped and had been properly maintained.

The Master, Captain James Ferguson, was justified in sailing having regard to the forecasts and gale warnings received. He had no reason to anticipate anything in the nature of exceptionally severe weather.

Previous Damage to Doors

Dealing with the November, 1951, incident, when the stern doors were damaged, the report says there was an attempt to minimise its importance. The Court failed to comprehend why, after this incident, the necessity for stronger doors had not become a matter of urgent necessity. It was no answer to say that the damage sustained was when the ship was being driven astern into a heavy sea. It ought to have been apparent that conditions might arise which would necessitate the ship being driven stern first into rough seas.

The seas on January 31 were not such as could not have been foreseen or anticipated. There were no exculpatory circumstances disclosed in the evidence.

Dealing with the events of January 31, the report finds that after the doors were damaged, all possible steps were taken to re-secure them, but the condition of the doors and the state of the sea made the attempts unsuccessful. The Master attempted to return to Loch Ryan, and all possible steps were taken to render prompt assistance when the ship was in distress.

System of Superintendence

On management and superintendence the Court stated the opinion "that the evils of remote control" were apparent in this case. The superintendence of the ship left much to be desired, for if and when she got into any trouble concerning which the Master required advice or assistance from higher authority, it was necessary for him to get into telephonic communication with the head office at Euston, some 400 miles away. This fact might have deterred the Master from making any but the most serious reports to the managers otherwise than by means of his daily written reports.

It was considered, says the report, that a responsible superintendent should have been stationed near one of the terminal ports, and that the distinction in function between managers and superintendents should be recognised. The Court was of the opinion that the lack of wise superintendence of the ship was indicated by the admission of one of the managers that there was no one in the whole organisation whose sole duty it was to look after the wellbeing of the structure of the ships. The whole tenor of the evidence given by the three managers led to the belief that they considered frequent visits to the ship were unnecessary and that they were content so long as no major incident was reported to them.

In conclusion the report states that if the *Princess Victoria* had been as staunch as the men who manned her then all would have been well and this disaster averted.

The registered Manager of the *Princess Victoria* was Captain John Dudley Reed, Manager, Irish Shipping Services, British Railways. Other managers who gave evidence before the inquiry were Captain W. S. Morrow, Assistant Manager, Irish Shipping Services, and Captain H. J. Perry, Marine Superintendent, Scottish Region, British Railways.

Alterations to B.R. Ships in Hand

After receiving the findings of the Court of Inquiry, the Railway Executive stated that it would make a full report to the British Transport Commission at the earliest possible date. It was also stated that, following consultations with the Ministry of Transport, alterations to ships had been effected or were in hand as follows:—

ss. *Lord Warden*: the stern doors have been strengthened, and freeing ports have been fitted.

ss. *Dinard*: work in connection with further stiffening to the doors, and the fitting of freeing ports, is in hand.

ss. *Hampton Ferry*: to be transferred to the Stranraer-Larne service later in the month to cover the seasonal ferry requirements. Alterations to the doors, and fitting of freeing ports, are in hand, and will be completed before the ship sails for Stranraer.

ss. *Shepperton Ferry*: similar steps are being taken.

New Machine for Oil Grooving

A demonstration was held on June 10, at the works of the maker, Trojan Limited, of a new design of oil grooving machine. The Selson Machine Tool Co. Ltd., one of the "600" Group of Companies, has been appointed sole agent. The first machine will shortly be sent to Canada for demonstration purposes.

Generating Process

The machine is capable of cutting any number of internal or external oil grooves, and during the demonstration a phosphor bronze bush was cut with six right and six left hand oil grooves in 43 sec.; the bush was 4¼ in. inside dia. × 3 in. deep. Furthermore the machine is also capable of producing oil grooves of normal standard design, internally or externally, parallel or tapered, or on the bearing faces of components. Multi-splines and keyways can also be cut.

The conception of the machine was as a result of a large order for phosphor bronze bushes received by the firm, in which it was necessary to devise some means of generating the oil grooves to keep costs of production to a minimum. The generating principle is used, and each groove is symmetrical on each side of the centre line, and is cut progressively without stopping the machine, a system having obvious advantages over separate indexing.

The variable gearing employed enables the cutting tool to oscillate the desired number of times to one revolution of the workpiece; from one to 24 grooves can be cut, and grooves cut only on parts of the helix angle can also be obtained by mounting a suitable cam which moves the tool away from the workpiece during portions of the stroke.

After the demonstration the visitors were taken on a conducted tour of the various departments of the works, which included the machine and fitting shops, inspection departments, the Trojan commercial vehicle chassis fabrication and assembly departments, and others.

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Parliamentary Notes

B.T.C. Employees' Retiring Age

The Minister of Labour (Sir Walter Monckton), asked in the House of Commons on June 9 by Mr. W. F. Deedes (Ashford—C.) what plans the B.T.C. had submitted to him under Section 95 of the Transport Act, 1947, for retaining employees beyond the retiring age of 65 in suitable cases, replied that that Section of the Act imposed no obligation on the Commission to submit plans.

Later, he said he had drawn the attention of the B.T.C., as part of the general approach he made to industry and central and local Government, to the general policy of extending the employment of older persons. The Commission had replied that it was implementing this policy so far as circumstances permitted; and where there were schemes now in operation which required retirement at a fixed age, these were being reviewed jointly with the trade unions concerned.

London Transport Committee of Inquiry

Mr. Gurney Braithwaite (Parliamentary Secretary to the Ministry of Transport) in a written reply on June 11 told Lt.-Colonel Marcus Lipton (Lambeth, Brixton—Lab.) that the Minister of Transport hoped to be able to announce very soon the names of the Committee of Inquiry into London Transport, and when the inquiry would begin.

Contracts & Tenders

The Railway Executive has placed an order with G. R. Turner Limited for 54 50-ton bogie rail wagons.

The Canadian Pacific Railway has signed a contract with Alexander Stephen & Sons Limited, Glasgow, for the building of a 7,000-ton train ferry for the Vancouver and Nanaimo service. The ship, a twin-screw diesel vessel, will cost $4,000,000 and is expected to be in service by May, 1955. With a speed of 15½ knots, it will be capable of three round trips daily on the short run across the Strait of Georgia, carrying 800 passengers, 28 railway vehicles, or 110 to 120 motorcars or lorries, or a combination of both.

British Railways, North Eastern Region, have placed the following contracts:—

F. & J. Watkinson, Bradford: Repairs and renewals, engine shed roof at Manningham Motive Power Depot.

H. W. Ward & Co. Ltd., Birmingham, 29: One No. 7 Capstan lathe for Walker Gate Carriage & Wagon Works.

Leonard Fairclough Limited, Chapel Street, Adlington, Lancs.: Construction of embankment for tip siding and driving of piles, Thornaby, New Motive Power Depot.

Renovators Provincial Limited Leeds, 7: Cleaning and painting station buildings, York District (Contract No. 1).

Allen McDermot, 8-10, Infirmary Street, Bradford: Cleaning and painting station buildings, York District (Contract No. 3).

Brighouse Estate Co. (Northern) Ltd., Brighouse: Erection of lengthmen's huts, Bradford District.

Taylor & Hubbard Ltd., Leicester: Two 10-ton diesel-engined permanent way jib cranes.

The Brighouse Foundry & Engineering Co. Ltd., Bradford: Diesel oil fuelling installation, Hull Springhead Motive Power Depot.

Air Pumps Ltd., London, S.W.20: Two diesel engine driven two-stage mobile compressors, model D.130, York District.

Wellerman Bros. Ltd., Sheffield: Reconstruction of roof, Wakefield (Crofton) Motive Power Depot.

The Canadian Pacific Railway has ordered from the American Car & Foundry Co. Ltd., 65 tank wagons, to carry fuel for diesel locomotives from refineries to railway depots. The wagons will contain 16,000 gal. and will be almost 50 ft. long and 10 ft. wide.

British Railways, Eastern Region, have placed the following contracts:—

R. Ridd & Son (Contractors) Ltd., Hornchurch: Cleaning and painting of offices, messrooms, toilets, roofs, warehouses, stores, bridges, signals, battery and telephone cupboards in Kings Cross Goods Yard (Midland Shed, 10 o'clock Road and Potato Market Road).

T. E. Cundy & Son Ltd., Leicester: Cleaning and painting of station buildings, awnings, roofs, warehouses, goods sheds, signalboxes, signals and line work between Carlton-on-Trent and Retford.

Shirley Painting & Decorating Service, London, N.4: Cleaning and painting of station buildings, subways, signalboxes and signals between Palace Gates and West Green.

Metropolitan Vickers-GRS Limited, London, W.C.2: Supply and installation of colour-light signalling at Potters Bar.

British Railways, Western Region, have placed the following contracts:—

Alfred Bagnall & Sons Ltd., London, W.12: Cleaning down and painting the underside of the roof and daylights to the circulating area, Paddington Station.

Dorman Long & Co. Ltd., Middlesbrough: Supply of steelwork for the reconstruction of the bridge under the line near Cilfrew Station, and that under the line near Henwick Station.

Johnson & Phillips Limited, London, S.E.7: Supply, jointing and supervision, and laying of five 0·2 sq. in. 3-core, 6,600-volt cables and one 8-core 0·052 in. dia. telephone cable at Westbourne Park.

Western Stone Cleaning & Restoration Co. Ltd., Bristol, 1: Cleaning stonework of station buildings at Swindon Junction Station.

W. G. Beaumont & Son, London, E.3: Painting passenger station and buildings at Westbourne Park.

W. H. Streeter Limited, Hampton, Middlesex: Painting Chipping Norton Station and Depot and Sarsden Halt.

H. E. Bardwell, Cheltenham: Painting signals, signalboxes, etc., at Gloucester South, Gloucester North, Over Sidings, Grange Court Junction, Westbury Crossing, and Church Lane Crossing.

E. A. Boswell & Son, Cardiff: External painting and repairs, Central Hotel, Cardiff.

British Railways, London Midland Region, have placed the following contracts:—

Mather & Platt Limited, London, S.W.1: Automatic sprinkler installation and oil fire extinguishers at St. Pancras Way road motor depot, London.

Robertson Thain Limited, Ellesmere Port: Renewal of roof coverings with protected metal sheeting at the south end of Rugby Midland Station; renewal of roof coverings with protected metal sheeting over the points and crossings shop at Crewe Works.

Fletcher & Co. (Contractors) Ltd., Mansfield: Reconstruction and widening of bridge carrying Didsbury Road over the railway on the Glazebrook-Godley line.

The Butterley Co. Ltd.: Fabrication and erection of steelwork for the reconstruction and widening of bridge carrying Didsbury Road over the railway on the Glazebrook-Godley line.

Johnson Floor Co. Ltd., London, W.6: Supply and laying Monofax flooring and supplying and fixing Ruberoid roofing between

Institution of Locomotive Engineers Summer Meeting

Photo] *[M. Crane*

At Prescot Station before visiting British Insulated Callender's Cables works. Mr. C. M. Cock, President of the Institution, is fourth from left, with Mr. J. B. Woodman on his right, and, on his left, Mr. A. E. Cook (*see our issue of May* 15)

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bays at the railhead depot at Brunswick Dock, Liverpool.

Under its 1954-55 rolling stock programme the Indian Railway Board is calling for tenders for the following equipment:—

Broad Gauge

(*b*) 20 "WHG" heavy goods 4-8-2 + 2-8-4 locomotives
(*a*) 100 "WG" goods locomotives
(*a*) 50 smokebox tube plates for "WM" locomotives
(*a*) 50 firebox back plates for "WM" locomotives
(*a*) 50 firebox throat plates for "WM" locomotives
(*a*) 50 firebox wrapper plates for "MW" locomotives
(*a*) 100 frame plates for "WM" locomotives
(*a*) 50 frame cradle casting for "WG" locomotives
(*b*) Ten boilers for "WG" class locomotives.
(*b*) 45 steel fireboxes
(*a*) 2,000 four-wheel open (heavy) wagons, without wheels and axles
(*a*) 2,000 four-wheel open wagons, without wheels and axles
(*a*) 2,000 four-wheel covered wagons without wheels and axles
(*a*) 10,000 complete wheel sets, 16 ton axles, for coaches and wagons
(*a*) 4,000 complete wheel sets, 19 ton axle, for wagons
(*b*) Four self-propelling, steam-operated transportation travelling cranes
(*b*) 26 electric motor coaches, all-metal, complete with wheels and axles, ready for service
(*b*) 24 electric trailer coaches, all-metal, complete with wheels and axles, ready for service
(*b*) 24 all-metal lightweight railcars, third class, complete with wheels and axles, ready for service
(*b*) Ten four-wheel tank wagons for the transport of anhydrous liquid ammonia, complete with wheels, axles and roller bearings, ready for service
(*b*) Ten four-wheel tank wagons for the transport of liquid chlorine, complete with wheels, axles and roller bearings, ready for service
(*b*) Six bogie well wagons, complete with wheels, axles and roller bearings, ready for service
(*b*) 30,000 tons rolled plates for steel trough sleepers—90R (B.S.S.) rails.

Metre Gauge

(*b*) Ten "YM" locomotives
(*a*) 100 "YP" passenger locomotives
(*b*) 13 boilers for "YB" class
(*a*) 2,000 four-wheel covered wagons without wheels and axles
(*a*) 1,000 four-wheel open high-side wagons without wheels and axles
(*a*) 500 four-wheel open wagons with side and end doors
(*a*) 1,600 complete wheel sets, 10 ton axle, for coaches
(*a*) 6,000 complete wheel sets, 12 ton axle, for wagons
(*b*) Nine self-propelling, steam-operated breakdown travelling cranes
(*b*) Seven self-propelling, steam-operated transportation travelling cranes
(*b*) 16 self-propelling, steam-operated transportation travelling cranes
(*b*) Six self-propelling, steam-operated transportation travelling cranes
(*b*) One diesel self-propelling transportation travelling crane
(*b*) One diesel self-propelling transportation travelling crane.

2 ft. 6 in. Gauge

(*b*) Ten "ZE" heavy goods locomotives
(*b*) Five diesel locomotives for general service
(*b*) 60 bogie coach underframes complete, but without wheels and axles
(*b*) 100 bogie covered wagons, complete but without wheels and axles
(*b*) 100 bogie open wagons, complete but without wheels and axles
(*b*) 30 bogie rail and timber wagons, complete but without wheel and axles
(*b*) Ten bogie hopper wagons with centre discharge, complete but without wheels and axles
(*b*) 280 complete wheel sets, 6 ton axle, for bogie coach underframes and hopper wagons
(*b*) 920 complete wheel sets, 8 ton axle, for wagon stock.

2 ft. Gauge

(*b*) Three diesel locomotives for general service.

Also :

	tons
(*a*)	3,500 steel plates
(*a*)	1,200 steel sheets (assorted)
(*a*)	2,100 spring steel (assorted)
(*a*)	1,750 spring steel (assorted)

(*a*)—List FP/4—A
(*b*)—List FP/4—B

Quotations should be submitted by September 1, 1953, for all items in List FP/4-A and by October 1, 1953, for all items in List FP/4-B. Offers for each item in either part should be submitted separately. They should be addressed to the Director of Railway Equipment, Railway Board, New Delhi. Manufacturers in the United Kingdom, Europe, and North America can obtain further details of designs and specifications from the India Store Department, London.

The United Kingdom Trade Commissioner has informed the Board of Trade, Commercial Relations & Exports Department, that large-scale developments of iron ore mining to the extent of several million pounds are about to be undertaken in Malaya by Eastern Mining & Metals Co. Ltd. Scott & English (South East Asia) Limited, 16, Bonham Building, Singapore, 1, is closely associated with this company and wishes to obtain agencies of United Kingdom manufacturers of the equipment which will be required, including metre-gauge railway equipment of all types.

Interested manufacturers are asked to write by air mail to Scott & English (South East Asia) Limited, giving full particulars of their equipment. The Board of Trade asks any who take action on this inquiry to notify the Commercial Relations & Exports Department, quoting ref. CRE/19141/53.

The Special Register Information Service of the Board of Trade, Commercial Relations & Exports Department, reports that the closing date for the receipt of tenders for railway equipment for Israel, set out in its circular TEN/6304/I.B.1, of May 5, has been extended. Tenders should now be submitted to reach the Ministry of Communications, Main Post Office Buildings, Jerusalem (New City), Israel, not later than noon on June 30.

RAILWAY LAND AND PREMISES FOR SALE.—The station buildings at Trimingham and Overstrand, on the Mundesley-Cromer section, recently closed, of the North Walsham-Mundesley-Cromer Beach branch of the Eastern Region (former M.G.N.J.R.) are for sale, as is the land over which the line passed. Passenger and goods train services are maintained between North Walsham and Mundesley.

Notes and News

Administrative Assistant Required.—Applications are invited for the post of administrative assistant required by the Nigerian Government Railway, for tour of 18 to 24 months with prospect of permanency. See Official Notices on page 719.

Kent Coast Visitor.—The "B1" class 4-6-0 from York shed illustrated on page 671 of our June 12 issue at Herne Bay, while on loan to the Southern Region, should have been described as a North Eastern Region engine and not as an Eastern Region engine as it was described in our caption.

British Railways Coal, Iron, and Steel Carryings.—The week's clearance by British Railways of deep-mine and opencast coal up to 6 a.m. on June 15 amounted to 3,202,480 tons, including 331,700 tons cleared during the weekend. During Coronation week 182,713 tons of iron and steel from the principal steel works and 315,800 tons of iron ore were carried.

Travel Restrictions Relaxed between East and West Germany.—Restrictions on travel between the German Federal Republic and the German Democratic Republic (Eastern Germany) were reported earlier this week to have been relaxed by the Eastern German authorities. The effects on passenger train working and acceleration, if any, are not yet known, but recently the two stops on either side of the border totalled anything up to one hour.

British Wood Preserving Association Annual Convention.—Papers to be read at the annual convention of the British Wood Preserving Association at Trinity College, Cambridge, on June 24-26 include one by Mr. J. T. Cosgrove, M.C., B.Sc.(Eng.), A.C.G.I., A.M.I.C.E., of British Railways, entitled "Pressure Creosoting: Seeking Better Results with Old Plants." Delegates who are members of British Railways staff are to include, besides Mr. Cosgrove, Mr. A. K. Terris, Assistant Civil Engineer, Eastern Region.

Labour Policy on Nationalisation.—In a new policy statement, *Challenge to Britain*, issued by the Labour Party Executive on June 16, it is stated that the party would re-nationalise the steel industry, on terms which would ensure that no profit was made at the expense of the public; and such road haulage units as were needed to provide a co-ordinated transport system—again preventing private owners making profits at the expense of the nation. It is proposed, further, to nationalise, among other undertakings, a number of key machine-tool firms, which would be closely linked with State-sponsored research organisations. Elsewhere it is stated that a "substantial degree of public ownership" is "required" for the chemical industry.

British Railways, Southern Region, Lecture & Debating Society; Proposed Visit to Transport Exhibition at Munich.—Provided sufficient support is received, one of the members of the Southern Region Lecture & Debating Society is proposing to arrange a short visit to the Transport Exhibition in Munich, which is being held from Saturday, June 20, to Sunday, October 11. This Exhibition, which is held every 25 years, is a comprehensive survey of the present day development of all forms of transport and communica-

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 *inclusive or a woman aged* 18-59 *inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order,* 1952.

ADMINISTRATIVE ASSISTANT required by NIGERIAN GOVERNMENT RAILWAY for tour of 18/24 months with prospect of permanency. Salary, etc., according to experience in scale £750 rising to £1,175 a year. Outfit allowance £60. Free passages for officer and wife and assistance towards cost of children's passages or their maintenance in this country. Liberal leave on full salary. Candidates of good education must have good railway experience including goods and passenger station work and accounts, rates and charges, operating and administrative statistics, railway and commercial law, the railway and road transport problem and legislation, modern office methods and equipment.

Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M3B/28263/RA. Applicants serving with British Railways would be eligible for secondment and should forward applications through local officers.

FOR SALE. B.H. Rails, 95 lb. Large quantity. PIKE BROS., Private Sidings, Colnbrook, Bucks. Phone 175.

THE PERUVIAN CORPORATION have the following vacancies on the railways in Peru:—Central Railway. ACCOUNTANT (Traffic Auditor). About 30 years of age, preferably single with general auditing and railway accounting experience. Southern Railways. ASSISTANT CIVIL ENGINEER (Divisional) with practical experience on railway maintenance. Guaqui-La Paz Railway, Bolivia. TWO ASSISTANT ENGINEERS, one with Electrical Mechanical Apprenticeship including experience with diesel engines and the other with Apprenticeship Permanent Way Department of British railway and with Drawing Office experience. Good education activity and first class health essential, age 25/30, single. Northern Railways. DIESEL ENGINEER with practical experience on diesel locomotives and railcars and workshop management. A knowledge of the Spanish Language is preferable in all these apointments or willingness to learn within 6 months. Apply: SECRETARY, 144, Leadenhall Street, London, E.C.3.

FOR SALE. 60-tons Horiz. Hydraulic Wheel Forcing Press, 38½ in. between tie rods, daylight 6 ft. 6 in., ram travel 12 in., with hand pump. Box 865, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

N.E.R. HISTORY.—Twenty-Five Years of the North Eastern Railway. 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr 8vo. 87 pages. 10*s.* 6*d.*—*The Railway Gazette*, 33, Tothill Street, London, S.W.1.

RAILWAY DRAUGHTSMAN-SURVEYOR Required by large firm railway contractors, applicants must have ability to carry out site surveys, plot same in layout form to good working scale (detailing for manufacture of turnouts etc., done by other draughtsmen), capable of full use of theodolite and level, duties to include site supervision of contracts in progress, age 25-30 years, man with British Standard Specification experience preferred, conditions of employment to include provision of car, all travelling and general expenses, five-day week on rota system, comprehensive, superannuation, scheme, etc., write in first instant, stating age, experience and salary required.—Box 861, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

THE GAS-TURBINE LOCOMOTIVE. A technical description of the gas-turbine recently constructed by the Metropolitan-Vickers Electrical Co. Ltd. for the Western Region, British Railways. Subjects dealt with include body construction, bogies, traction motors, prime mover, generators and auxiliary equipment. A folding plate drawing of the locomotive is included together with illustrations and diagrams. Reprinted from *The Railway Gazette*, February 1, 1952. Price 5*s.* Post free 5*s.* 2*d.* *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25*s.* per volume post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

tions. It is proposed to combine with the visit the opportunity of inspecting one or more typically German transport installations, and the whole trip would occupy five days, including a weekend, probably at the end of September.

U.S.S.R. and Eastern European Countries: Through Passenger Working.—Through working of passenger vehicles between Moscow and other Eastern European capitals is reported, with change of axles at the break of gauge. The gauge of the U.S.S.R. railways is 5 ft., whilst that of most lines in the "Iron Curtain" countries is standard 4 ft. 8½ in. Axle changing in through passenger vehicles is a revival of a practice obtaining before the first world war in certain through sleeping car services between imperial Russia and the West.

Argentine North Eastern Railway.—The statement of the liquidators of the Argentine North Eastern Railway shows receipts for the year ended March 30 last of pesos 652,440 (in London £156,988). Accounts and cash in hand total pesos 590,507 (£145,195). With the object of paving the way for a final distribution, the liquidators, with those of other British-Argentine railway companies, requested the Buenos Aires representative to come to London for a meeting. It is hoped to announce further progress at the general meeting on June 25, to be held at 3 p.m. at 121, Queen Victoria Street, London, E.C.

Lightweight Diesel Train Trials in Scotland.—Continuing the special study of the possibilities of light diesel units in developing traffic, and for working it more economically on branch lines and on suitable main line services, the A.C.V. lightweight three-car diesel train will be operated experimentally during the next two weeks on Scottish Region services between Ayr-Dalmellington and Ayr-Kilmarnock. From June 15 and until June 27, the unit is working all scheduled services between Ayr and Dalmellington in both directions, with the exception on Saturdays of the 12.45 p.m. and 10.20 p.m. trains from Ayr and the 2 p.m. train from Dalmellington. The following services between Ayr and Kilmarnock are also being operated experimentally by the new diesel train from Monday to Friday during the two-week period: 8.52 a.m. and 3.46 p.m. Ayr to Kilmarnock; 10.37 a.m. and 5.8 p.m. Kilmarnock to Ayr. The train was described in our May 30, 1952, issue.

"Five Centuries of Maps and Map-Making" Exhibition.—An exhibition covering five centuries of surveying and map making is being held at the Royal Institution of Chartered Surveyors, Great George Street, London, S.W.1, and will remain open until July 4. In the thousand exhibits, transport and navigation are well represented. There are plans and sections of the Liverpool & Manchester, London & Birmingham, and Great Western Railways, some from the archives of the B.T.C. A contract between the London & Birmingham and Sames Thornton bears coloured drawings, signed by Robert Stephenson, of "siding or passing place," "sliding rails" and other features. Present-day subjects include a fine photograph from the air of the functions north of Croydon.

Civitas Grease Gun Filler.—The Civitas Trading Corporation Limited is placing on the market a device for filling grease guns. Known as the Fila-Gun, the equipment can be fitted to a standard 28-lb. grease keg. The grease gun with the filler cap removed is placed in position

Station Decorations at Chester

Coronation decorations on the frontage of Chester General Station, London Midland Region

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over the discharge nozzle of the apparatus, and the gun is filled by the depression of two levers. Apart from the convenience, the method also has the advantage of being free from any foreign matter, and gives the user the equivalent of a high-pressure greasing unit. The apparatus is suitable for all greases, and particularly for heavy fibrous grades.

Head-On Collision in South India.—Fifty persons are reported to have been killed and 70 injured in a head-on collision between a goods and a passenger train near Madanapalle, on the Southern Railway of India, about 200 miles from Madras. Madanapalle Road Station is on the metre-gauge section of the former Madras & Southern Mahratta Railway between Dharmavaram and Pakala.

Eastern Region Train Punctuality.—For five days last week 1,222 Eastern Region suburban trains carried a million people during the morning and evening rush hours to and from Liverpool Street and Fenchurch Street stations. Of these, 93 per cent arrived right time. Of the remainder only three trains experienced more than slight delay, giving a good timekeeping factor of very nearly 100 per cent at the end of the week's working.

"The Model Engineer" Exhibition.—*The Model Engineer* Exhibition is being held from August 19 to 29 at the New Royal Horticultural Hall, Westminster. The passenger-carrying multi-gauge live steam track, operated by the Society of Model & Experimental Engineers, a most popular item in past exhibitions, will be exhibited. A miniature Grand Prix track and a steam-driven model of a showman's roundabout are notable attractions besides the competition models.

Record Steel Output in May.—Steel production in May was a record for the month, with a weekly average of 350,700 tons. The previous best May output was in 1950, when the weekly average was 319,200. The weekly average in May, 1952, was 312,400 tons. Last month's figure represents an annual rate of 18,236,000 tons compared with an annual rate of 16,245,000 in May of last year. Production of pig iron in May was also at a record rate for the month. It averaged 214,700 tons a week, representing an annual rate of 11,165,000, against an annual rate of 10,456,000 in May, 1952.

Dunlop Rubber Co. Ltd.—Lord Baillieu, Chairman of the Dunlop Rubber Co. Ltd., said at the Company's recent annual meeting in London that the report and accounts for 1952 directly reflected the change to a buyer's market in this country and abroad. The magnitude of the problem facing their company was shown by the fact that a ton of rubber worth £383 in 1951 had dropped in value to £252 at the end of 1952, but manufacturers' inventories of raw materials and finished goods were at the higher cost levels previously ruling. There was a hopeful future to be seen in growing freedom from controls and new incentives appearing just above the horizon. Every opportunity must be sought of increasing turnover and exports, raising productivity, achieving greater efficiency and lower costs, and of re-awakening the arts of salesmanship. If they succeeded in this they would be putting real value in the pound sterling, increasing the net worth of every pay packet, and helping to reinstate an economically stable and prosperous Britain.

Forthcoming Meetings

June 24 (*Wed.*) to 26 (*Fri.*).—British Wood Preserving Association Annual Convention at Trinity College, Cambridge.

June 25 (*Thu.*).—Railway Students' Association. Evening visit to inspect new signal installation at Euston Station, London Midland Region of British Railways.

June 27 (*Sat.*).—Railway Students' Association. Summer outing to Woking and Hindhead. Party assemble at 2 p.m. at Woking Station, British Railways, Southern Region.

June 27 (*Sat.*).—Permanent Way Institutions, Leeds and Bradford Section. Visit to Earles Cement Works at Hope.

June 28 (*Sun.*).—Railway Correspondence & Travel Society. Twenty-fifth anniversary special to Exeter. Train will leave Waterloo Station, British Railways, Southern Region, at 9.45 a.m.

June 29 (*Mon.*).—Indian State Railways Annual Dinner at the Rembrandt Hotel, Thurloe Place, London, S.W.7, at 7 for 7.30 p.m.

July 1 (*Wed.*) to 3 (*Fri.*).—Institute of Transport Annual Congress in Glasgow.

July 4 (*Sat.*).—Irish Railway Record Society. Half-day visit to the railway system of Messrs. Arthur Guinness Son & Co. (Dublin) Ltd.

July 7 (*Tue.*) and July 9 (*Thu.*).—Railway Students' Association. Evening visits to resignalling installation between Selhurst Junction and Victoria, British Railways, Southern Region.

July 10 (*Fri.*) to July 12 (*Sun.*).—Industrial Co-Partnership Association, 36, Victoria Street, London, S.W.1. Weekend Conference at Somerville College, Oxford.

Railway Stock Market

Uncertainty has been rather more pronounced in stock markets where British Funds lost a little of their recent outstanding strength. Industrial shares were very quiet, mainly through difficulty in assessing the world trade outlook, and partly because of the lower profits shown by financial results for the past year. Sentiment is still affected by the fear of a trade recession in the U.S.A. when there is a slowing down in rearmament work and industry has to re-adjust itself to more normal activities. Nevertheless peace in Korea would probably not mean a big reduction in rearmament, which in any case would be gradual.

Commodity and shares of base metal mining companies are out of favour because of expectations that Korean peace would mean a sharp decline in commodity and metal prices, though this would be a bull point for industry which is still facing rising costs in some directions. The prevailing City view is that the first of the big steel issues is likely to appear before the holiday period, possibly next month; and it is being suggested that it may be either United Steel, or Dorman Long. Whatever is the first issue, it is assumed it will be a big success, because the financial institutions sponsoring the issues will wish to give a good start to the important financial operation involved in offering steel shares back to the public.

There was again only moderate business in foreign rails, partly because interest in this and kindred sections of markets has centred mainly on foreign bonds, which are attracting a good deal of speculative activity these days.

Business in United of Havana stocks, however, was again on a larger scale on the assumption that a statement will be made shortly on the progress of the take-over talks which have been taking place in Cuba. It is widely assumed that the minimum offer the directors would accept for the railway would be the equivalent of £5,000,000. On this basis the various stocks would be worth more than their current prices, but it remains to be seen if an agreement is actually concluded and whether payment of the purchase money would be spread over a period of years. At the time of going to press United of Havana "A" stock is changing hands around 69, the 4 per cent "B" around 69½, and the second income stock is 25½, while the consolidated stock attracted considerable speculative attention around 4½.

Nyasaland Railway 3½ per cent debenture have changed hands around 75, and Emu Bay 4½ per cent debentures marked 54. In the Indian section, Barsi changed hands around 119½.

There was further speculative buying of old Russian railway bonds with Russian South-Eastern at 17s. 6d. and Troitak 18s. 9d.

Chilian Northern first debentures were 26. Taltal shares were 14s. 6d. and Nitrate Rails shares 21s. 3d. Antofagasta ordinary stock was 8¾, the preference 43, and the 5 per cent debentures 65.

Costa Rica ordinary changed hands around 11½ and the first debentures around 68. Guayaquil & Quito bonds were dealt in up to 39.

Canadian Pacifics at $46⅝ reflected the better tendency in dollar stocks; while the 4 per cent preference stock was £64½ and the 4 per cent debentures £82¼. White Pass have been less active around $30½ and the convertible debentures were £107.

Mexican Central "A" bonds became firmer at 71½. San Paulo ordinary units were 6s.

Among road transport shares, Southdown were 32s. 6d., Lancashire Transport 49s. 6d., and West Riding 37s. B.E.T. stock has been active up to £550 in response to the higher dividend and the financial results. The proposal to split the £100 deferred stock into 5s. units has been welcomed, because in this form there will be a much more active market. Based on the current price of the stock the equivalent price of the 5s. units would be 27s. 6d.

Quiet again prevailed in engineering and kindred shares, mainly because of surrounding market conditions, but partly because of a widespread tendency to await the first of the big issues of steel shares. It is argued that if steel shares are offered at prices showing yields of around 7½ per cent, there may be a fair amount of selling of engineering shares showing smaller yields in order to exchange into steel shares. Vickers have receded further to 48s. at the time of going to press, Guest Keen to 45s. 9d., while T. W. Ward were 71s. 6d., Babcock & Wilcox 65s., and Tube Investments 55s. 6d.

Among locomotive builders and engineers, Beyer Peacock were 32s. 6d., Hurst Nelson eased to 39s. 9d., and North British Locomotive were 13s. 3d. Vulcan Foundry were 20s. 3d., Gloucester Wagon 10s. shares 11s. 3d., while Charles Roberts 5s. shares were 14s. 6d. and Wagon Repairs 5s. shares 11s. 6d.